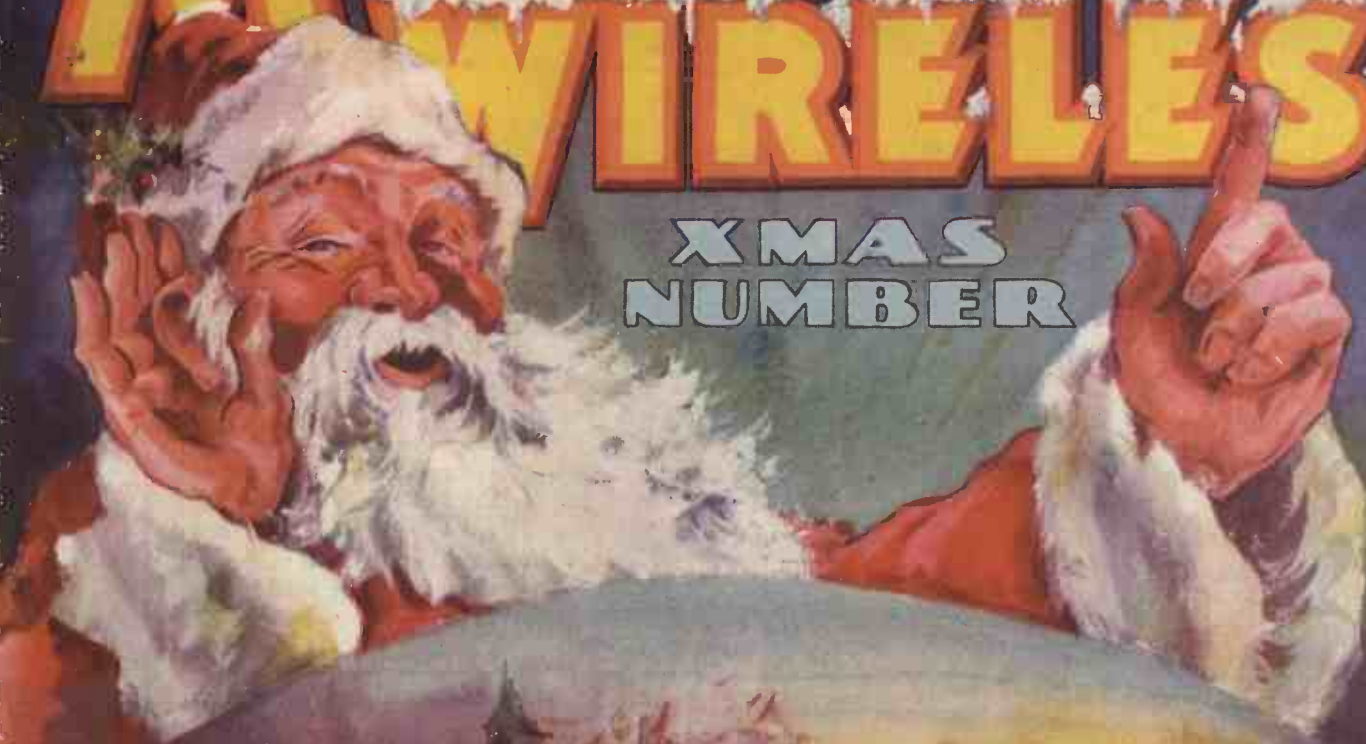


Price  
**1'**

# MODERN WIRELESS

**XMAS  
NUMBER**



Vol. XVIII. No. 72. DEC., 1932.

**EASY TUNING  
ENSURED**

**"M.W." DIAL  
DIAMONDS**

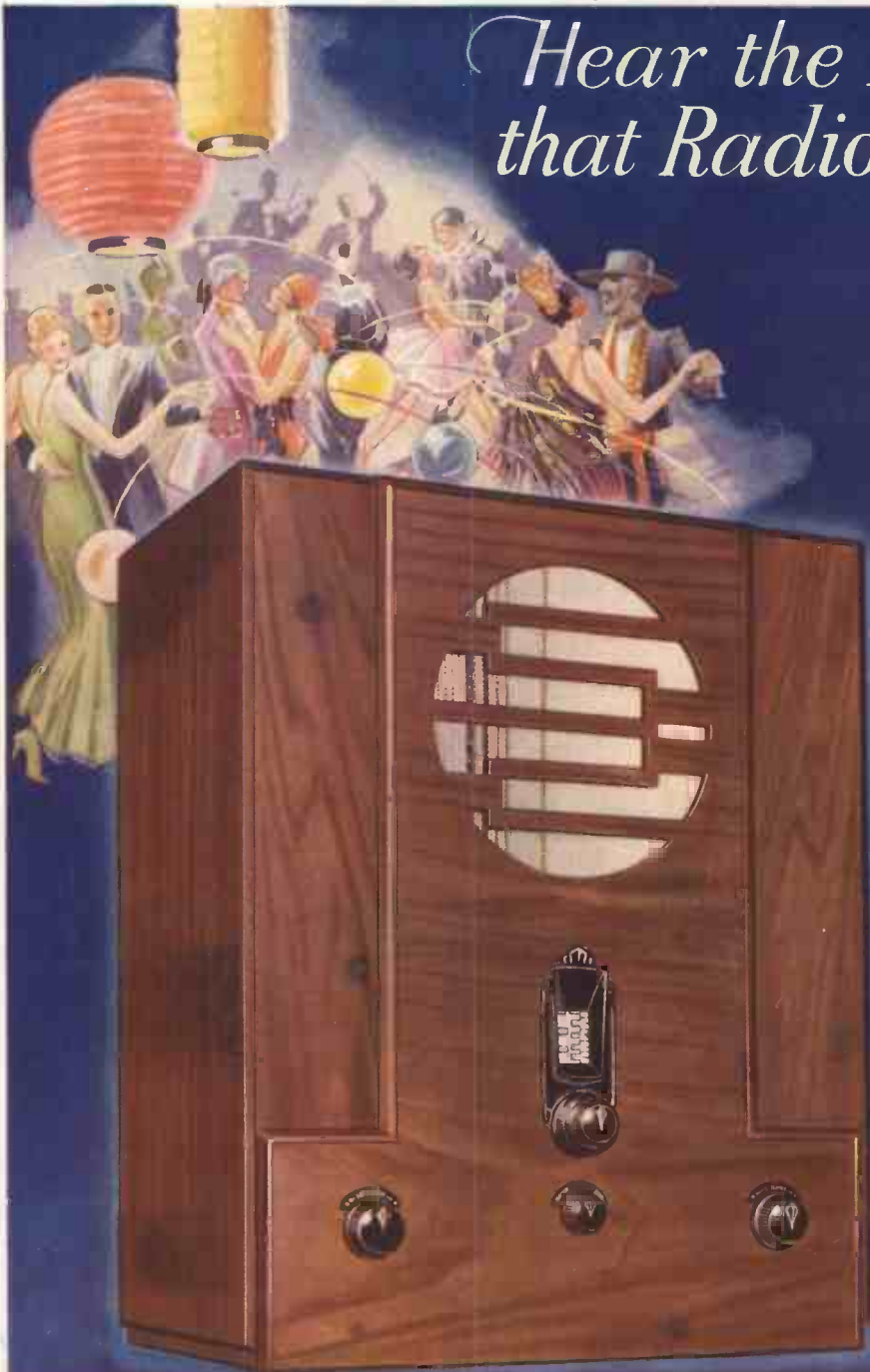
**NOVEL GIFT INSIDE  
FOR YOU**

**WILL SOLVE YOUR  
STATION-FINDING  
PROBLEMS**





# Hear the Best that Radio can offer



**I**N its superb design and construction, its brilliant simplicity, its wonderful range—above all, in its glorious tone . . . that fidelity of reproduction which inspired the phrase "The Golden Voice" . . . the MACNAMARA represents a veritable triumph of radio perfection. Designed and built throughout by the largest and most completely equipped radio organisation in the world, it sets the standard not only in performance, but also in value, for all receivers of its type. Ask your dealer to let you hear it—to-day.

#### MODEL 312

In a plain oak-framed (unstained) cabinet, produced for those who desire to refit the receiver in a cabinet to their own particular tastes and requirements.

**12** OR ON 12 MONTHLY  
PAYMENTS OF 20/-  
GNS. after Initial Deposit of 35/-.

#### MODEL 315

In a beautiful superbly finished solid walnut cabinet of restrained modern design.

**15** OR ON 12 MONTHLY  
PAYMENTS OF 25/-  
GNS. after Initial Deposit of 45/-.



# MACNAMARA

## The Golden Voice

### ELECTRIC RADIO

MANUFACTURED BY

TELSEN ELECTRIC CO. LTD., ASTON, BIRMINGHAM



# More About "THE PROGRAMME PRINCE"

It must not be thought that because we are putting up these wrinkles that the "Programme Prince" is not selective in the form in which it was first described,

but a great many set constructors find much of their enjoyment in trying circuit variations, and those outlined here will give them a few to test for themselves.

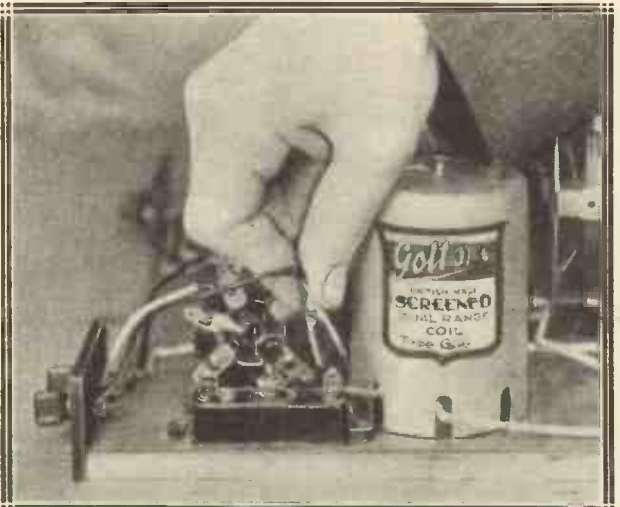
If you are not sufficiently technical-minded to be able to carry out the alterations without special diagrams, however, we would advise you not to try them, as it is easy to upset the circuit and get things wrong unless you know what you are doing.

Those who live a great way from a broadcasting station, and who want the full power out of the set without worrying about selectivity, will like to try the expedient of connecting the crocodile clip attached to the aerial input flex to the terminal number one on the first coil.

This has the effect of converting this coil into a plain tuned inductance without any primary input winding.

Naturally, this will give very much flatter tuning, and it should only be tried in cases where the very last

## CLIPPING OUT THE CONDENSER



In series with the aerial lead of the set is a pre-set condenser for varying the selectivity. If the use of this condenser is not found to be necessary it can quickly be cut out of circuit by simply moving the crocodile clip from one of its terminals to the other.

**H**ow do you like the "Programme Prince"? It is a simple receiver to handle, isn't it? But to the enthusiast there is always something in the way of minor alterations and adjustments that will make all the difference in the reception. Such changes are interesting as well as being useful, too.

In the "Programme Prince" there are a number of things that can be done to increase either the sensitivity or the selectivity of the set, assuming that it is desired to try out special stunts and adjustments.

### Completely Cut Out

In the normal set the aerial coupling is carried out through a pre-set condenser which is connected to the aerial lead by means of a flex lead and crocodile clip. This condenser can be tried at varying settings, and also completely cut out if variation of selectivity is required. With the condenser in circuit the selectivity can be varied between very wide limits, while with the condenser out, and the crocodile clip connected to the first coil direct, the selectivity is reduced to a minimum and the full force of the set is obtained.

Another interesting variation from the circuit as shown in the diagram is a simple alteration of the connection between the screened-grid valve anode and the grid circuit of the detector.

In this case the feed from the screened-grid valve is taken not to the terminal one on the second coil, but to terminal six, though the lead from terminal one to the grid condenser of the detector is left connected to number one as before.

### Variation in Selectivity

This change will naturally alter the wiring slightly, but it will provide a further variation in the selectivity of the set. A better variation is to leave the connections as they are except that the connection to number one is taken instead to terminal number six. The tuning condenser is left connected to the terminal number one as before.

In this case the tapping of the grid down the coil removes the effect of the detector damping to a certain extent, and the selectivity is increased accordingly.

*Some final details for builders of the "Programme Prince," a blue-print of which was given away with every copy of last month's "Modern Wireless." The finer points of the operation of this efficient S.G., det. and L.F. set are dealt with.*



## Getting the Best from Your "Programme Prince"

ounce in the way of H.F. amplification is required, regardless of selectivity. Perhaps we should not put it quite that way, for the amplification of the screened-grid stage is not altered, it is the input from the aerial that is increased, making the H.F. output of the set larger.

It will probably be asked by some whether a pick-up can be used with the "Programme Prince." This can certainly be done by a small alteration of the wiring. It is advisable to move the on-off switch from its present position and to place it farther up the panel.

This leaves room for a pick-up switch which can be fitted in place of the on-off switch. It is better to have the pick-up switch below on the panel so that the wires to it shall be as short as possible.

A simple three-point change-over switch is required, and to this is taken the grid of the detector valve (to the centre point of the switch). The remaining two contacts are joined in one case to the

lead from the .0003 condenser that went to the detector grid, and the other to one side of the pick-up, or, better, to the slider of a potentiometer across the pick-up.

The 2-megohm grid leak can remain across the detector valve-holder terminals as at present. The remaining side of the pick-up, or the "earth" side of the pick-up potentiometer, is then taken to a wander plug for insertion in the grid-bias battery at about 3 volts.

It may be argued that the grid leak is across the grid-bias battery, but the current it draws is not worth worrying about. This can be avoided, of course, by removing the grid leak when fixing the pick-up switch and re-connecting the leak to the radio side of the switch instead of to the grid direct.

The advantage in having the grid leak always in circuit is that it prevents that annoying click or thud when the set is switched from radio to pick-up without the filaments of the valves being turned off.

### THE RIGHT H.T. FOR RIGHT RESULTS



Varying the voltages applied to the three H.T. positive taps will often produce improvements in results. So don't miss this chance of making a fine set even better!

It is well known that for maximum efficiency a short-wave receiver should be supported a little distance above the table or bench on which the rest of the gear is placed.

Valve boxes are often used, but these, to say the least, do not improve the appearance of the station. Quite

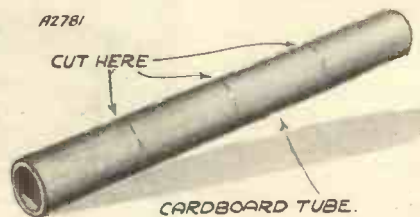
\*\*\*\*\*  
**SUPPORTS FOR SHORT-WAVE RECEIVERS**  
*Some tips for lifting the set above the table to increase efficiency.*  
 By 2 A X M  
 \*\*\*\*\*

Two tubes, if they are short ones, will be required, and the sections must be exactly equal in length.

#### Smoothed With a Knife

A good way of ensuring this is to mark lines round the tube (Fig. 3), and then cut along these lines with a very sharp knife. Any slight inequalities may be smoothed down afterwards with the knife.

#### DIVIDE INTO FOUR

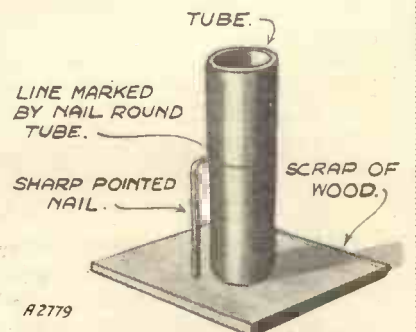


An ordinary postal tube is cut up into four equal lengths. (Fig. 2.)

Then a section of tube is placed so as to support each corner of the receiver cabinet (or baseboard, if no cabinet is used), as in Fig. 1.

The appearance of the supports may be greatly improved by blackening them with Indian ink, when used under an ebonite panel, or, in the case of a metal panel, the supports may be given a thin coat of aluminium paint.

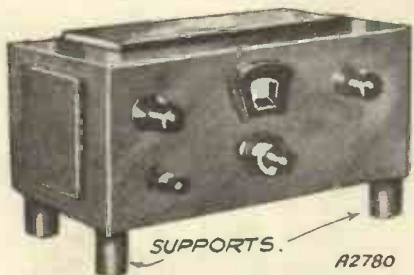
#### MARKING THE TUBE



A bent nail run round the tube will mark very accurately the line for cutting. (Fig. 3.)

Short lengths of paxolin tubing could be used equally effectively, but are, of course, more expensive to buy.

#### "UP IN THE AIR"



—but not from an H.F. point of view. As a matter of fact the legs will increase efficiency. (Fig. 1.)

the neatest and most effective method I have ever struck is as follows:

An ordinary cardboard postal tube is obtained, and is cut, as shown in Fig. 2, into four sections, each between two and three inches in length.



A special section for all listeners. It includes numerous practical hints and tips for maintaining a radio receiver in good order, and describes how time, trouble and money can be saved in use and operation.



**T**HE number of letters of appreciation which we have received is most gratifying evidence of the success we have achieved with this section.

Now we do not want to give the impression that we are ungrateful, but we feel bound to point out that unqualified praise is not all we desire.

We would extend an even greater welcome to communications offering criticisms and suggestions. Meanwhile, in the absence of all but a few of these, we will do our very best to maintain and even raise the quality of our succinctly practical contributions.—*The Compilers.*

order to avoid shocks and short-circuits.

Many listeners prefer to compromise and purchase H.T. mains units to replace the H.T. dry batteries, for these are the most costly of the "perishable" items in radio.

And the small accumulators, which require charging only every three or four weeks, are easy to carry, for they are light in weight and mostly non-spillable.

H.T. mains units are perfectly satisfactory, and can now be readily

separate components of which they are built.

But it often happens that when a mains unit is connected to a set instead of an H.T. battery the result is at first disappointing.

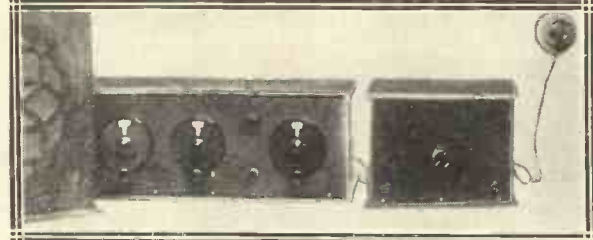
It may be that loud howling results. This will probably be due to instability.

Listeners seldom use the kinds of voltage almost any mains unit will provide when they have to pay for every volt as in buying batteries.

Next month we shall go into this subject in detail, and show how what are known as "de-coupling" and "extra smoothing" can easily be added to deal with instability and hum when a mains unit is used.



**WHY DOES THE SET START HOWLING ?**



It often happens that a set starts to howl when a mains unit is used instead of an H.T. battery. The cause and cure are dealt with on this page.

Grid-bias batteries are cheap and last for long periods and L.T. accumulators are not particularly bothersome these days.

Modern valves consume comparatively small filament power, and charging costs for L.T. accumulator batteries are low. Generally they are a matter of but a few pence.

obtained for either D.C. or A.C. mains at prices within the reach of all.

**It Does Not Pay.**

In the ordinary course of events it does not pay to construct them, for the safely encased commercial models are nearly as cheap to buy as the

**THOSE HETERODYNE WHISTLES**

**A**MONG the most annoying of troubles experienced in radio reception are heterodyne whistles. They are annoying because they can be caused by distant, comparatively weak transmitters.

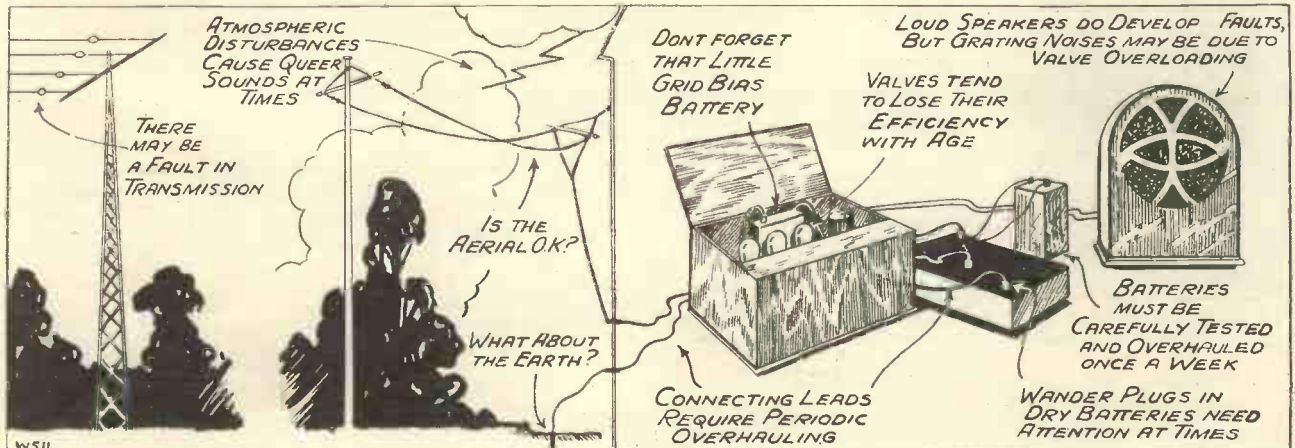
It seems all wrong that one of these far-removed continental

**CONCERNING MAINS UNITS**

**C**HANGING over from batteries to "all-mains" radio is a somewhat expensive business. Almost invariably it necessitates the entire scrapping of the existing set.

Expensive mains components and valves have to be purchased, and great care taken in installing the set in

**SOME FAULT-FINDING AND MAINTENANCE TIPS CONCISELY AND GRAPHICALLY DEPICTED**





# The Needle Shows You When and Why Your Set Distorts

stations should be able to interfere with a powerful local programme.

The whistle is invariably high-pitched and cannot be heard on some loudspeakers, simply for the reason that the sound is beyond the higher limit of the frequency scale which they can reproduce.

To cut out the noise there must be a sacrifice of high notes, either by employing an inefficient speaker or by using a filter.

Many consider the sacrifice is, on occasions, well worth while.

## USING A MILLIAMMETER

WE promised to deal fully with the permanent connection of a milliammeter. It should preferably be on the panel of the set itself, where it can easily be seen.

A cheap "moving iron" instrument would serve the purpose quite well. It should read up to about fifty per cent more than the total H.T. current taken by the set.

The average three-valve will take about 10 milliamperes, and in this case a meter reading up to 15 m.a. would suffice.

## CHECKING THE H.T.



A milliammeter joined in the H.T. circuit will provide a constant check of the condition of the batteries.

The meter should be joined in series with the H.T. negative lead from the battery. That is to say, the H.T. negative battery lead is joined to one terminal of the meter, and the other terminal of this is connected to the H.T. negative terminal of the set. Or, of course, the instrument can be included in the interior wiring of the receiver.

You can now read the total H.T. current. And if you note what this is when you are sure the batteries and valves are in good order, you will in future be able to see at a glance whether or not this happy condition is being maintained.

## THE WATCHMAN



Why shouldn't the meter be on the panel of the set as a constant indicator?

If the reading suddenly begins to rise you will know that in all probability your grid bias is out of order.

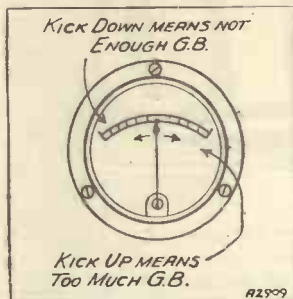
Should the reading fall, then either the H.T. or L.T. is running down, or

one or more of the valves is losing its efficiency and may need replacing.

But make sure that the meter needle does not stick and is at all times working freely.

Don't worry about slight needle flicker, but fair movements, say a quarter of an inch on a small meter, indicate substantial faults.

## TELL-TALE KICKS



The milliammeter needle tells you whether or not your grid bias is right.

To and fro flickers will doubtless mean overloading (a valve receiving more input than it can deal with), while upward and downward kicks indicate too much and too little grid bias respectively.

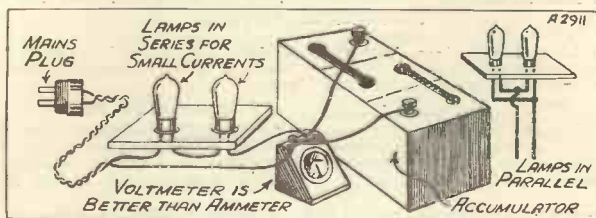
## HOME-CHARGING HINTS

IT is a simple matter to charge an accumulator, though in the case of A.C. mains a rectifier is essential.

With D.C. mains all that you have to do is to connect lamps in series with the battery. The lamps should take the current at which you desire to charge. And you can connect the lamps themselves either in series or parallel.

Two similar lamps joined in series

## BUT DON'T LEAVE THE METER!



A low-voltage-reading voltmeter must not be connected as shown when the battery is disconnected. You are told why in this article.

take half the current of one. When in parallel the total current is the sum of the individual current consumptions.

Supposing there are two lamps each taking one-third of an ampere. In parallel the current consumed will be two-thirds of an ampere, while in series it will be one-sixth of an ampere.

It is very easy to work out the current consumption of any lamp. You merely divide its wattage by the voltage of the mains. (The lamp must be suitable for the mains voltage, of course.)

A 50-watt, 250-volt lamp will take one-fifth of an ampere. If desired you can discover the resistance by dividing this current figure into the voltage.

As you will see, if you employ lamps you will hardly need an ammeter, but a voltmeter is almost essential.

By testing the battery now and then while it is actually being charged you will be able to note the progress of its replenishment.

Further, you will have a check on the connections of the charger, for if the battery is joined up the wrong way round, the voltage will not steadily rise as the charging proceeds.

However, you must not leave the voltmeter in circuit when the battery is taken away, or it may be ruined by the sudden strain imposed upon it.

It is vital that the negative lead from the mains should be taken to the negative terminal of the battery, although it won't matter if lamps or resistances intervene.

A voltmeter test is not sufficient to indicate fully the condition of an accumulator, and if you do your own charging we urge you to apply hydro-meter tests as well.

## MISLEADING NOISES

AS we have previously observed, many and varied are the peculiar noises which are to be heard issuing from loudspeakers.

We are unable to frame a quick guide for identifying such noises, because similar sounds can often be due to different causes.

However, we can at least tell you about some of them so that you will be prepared not to jump too easily to conclusions.

### Valve Overloading

Listeners sometimes encounter harsh metallic noises. These sound so much of a metallic rattle that there seems no doubt at all but that they are due to a fault in the loudspeaker itself. Or there may be a sizzling, grating sound that is exactly like one would expect if a wire came loose on one of the speaker's moving parts.

But either kind of sound can be developed in the set itself. Valve overloading most frequently causes such effects.

Now, most listeners would test for this by turning down the volume control if one is fitted. However, that might not be a good test.

If the volume control were situated in the L.F. part of the set—that is, after the detector—it could not

It then rubs up against the magnet pole-pieces. Or one or more of the turns of wire on the moving coil might have worked loose.

The inexperienced listener should not try to rectify such faults himself; it is a job for the skilled mechanic to tackle.

## WASTED WANGLING



Metallic sounding noises may not be due to the loudspeaker at all.

But in the event of hearing "loudspeaker rattle," he can at least run over the speaker very carefully for loose nuts or terminals.

We have heard of a few cases of chattering loudspeaker transformers. In such instances buzzing sounds are heard direct from the component, and do not emanate from the loudspeaker itself, although unless listened for with patience and care this fact may not be at once apparent.

The cause is to be found in loosely assembled laminations in the transformer. These vibrate and act like primitive loudspeaker diaphragms. The only practical cure is to change the component.

## THOSE LIGHTNING GADGETS

ONE more summer has come and gone, and despite the fact that millions of listeners take no precautions, lightning has done very little damage to radio installations anywhere in the world.

And even in the very few instances where there has been a "strike," we have nothing to show us that the lightning wouldn't have struck in any case. Further, we have no record that serious bodily harm resulted as a consequence of any domestic exhibition of nature's own violent radio transmission.

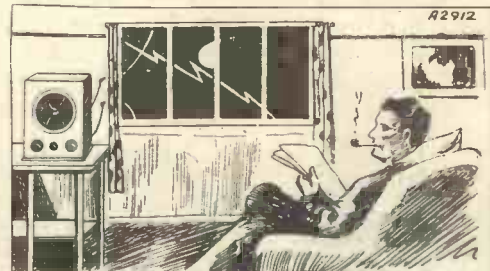
### Odds Against Them

What, then, is the case for the so-called lightning protector or earthing switch? It is just this.

Such gadgets cost little and they definitely do add security to a radio installation. We advise their use even if the odds against them ever being called into action are extremely long.

Only one listener using an un-earthed aerial during a thunderstorm

## WHAT ABOUT THAT AERIAL?



Is it dangerous to leave the aerial "unearthed" during thunderstorms?



# There'll be Another Instalment of Better Radio Next Month

may be given a severe shock during the next year or two. But you don't want to be that listener, do you?

## WHAT ABOUT YOUR EARTH?

IN some ways the earth connection is much more important than the aerial, although we doubt whether it usually receives as much attention.

Some sets are definitely unstable if they are not provided with fairly good earths. Others will even hum unless their antenna systems are completed in that way.

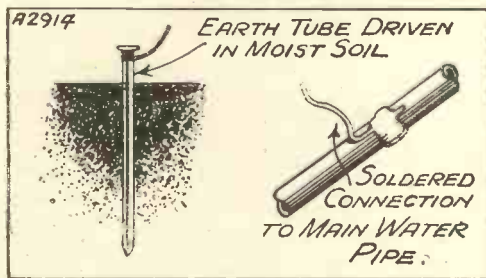
Owners of D.C. mains sets may smile at the foregoing words in view of the fact that it may appear to make little or no difference to their results whether or not an earth is used.

### Exception to the Rule

But D.C. sets are exceptions to the rule, because they tend to find a good alternative to the normal earth in the D.C. mains themselves.

This they do quite automatically. In some cases to use an ordinary earth as well brings slight improve-

## TWO GOOD METHODS



ment with it, although almost as often hum is introduced; but we cannot go into that now.

Anyway, all battery sets should have earths unless they are equipped with frame aerials.

Gas pipes do not make good earth connections, and in some districts there are by-laws against their use in this way.

The best earth is the buried type. But the old zinc bath, or whatever it is that you bury, should be sunk in damp soil if possible.

If the only convenient spot is dry and sheltered from the rain, go down deeply; four or five feet if you can. It is seldom that the soil is dry down there in this country.

It should be noted that there is now available a special chemical earthing device that will give good results without having to be buried deeply. It attracts moisture to itself in an almost uncanny fashion.

One small soldered joint and screwed terminal joining the wire to the buried metal is not likely long to resist corrosion.

The wire should be wrapped round and fixed at reverse points by bending lugs out and screwing it as well as soldering and screwing.

### Sweated Joint

Earth tubes are quite efficient. The connecting wire should be stranded copper adequately covered with weather-resisting material.

When a water pipe is used for the earth, special methods must be adopted for connecting the wire to it.

By far the best plan is to get a plumber to make a proper sweated joint.

Alternatively, Post Office type screw clips can be purchased. Don't

try to make a soldered joint unless you have had plenty of experience at such jobs.

Soldering on to a cold-water pipe is a difficult thing to do.

## BRING YOUR SET UP TO DATE

THERE have been enormous improvements made in radio during the past year or two and owners of old sets might well look at them very critically.

But in these days there is a decreasing number who can afford to scrap a whole set in favour of an entirely new outfit.

However, it may be possible to improve matters a very great deal merely by exchanging certain of its parts for more modern ones.

Probably the greatest progress has been made in loudspeakers. Many three-or-four-year-old sets would sound almost as good as 1932 models if they were fitted with new speakers.

### Minor Modifications

When the loudspeaker is separate it is an easy matter to make the replacement. If it is built into the set it may be difficult to replace it without serious constructional alterations.

This is by no means always the case, and it is frequently possible to make the change with only minor structural modifications so long as the new speaker is carefully chosen with this end in view.

But there is no reason why the built-in loudspeaker should not be cut out of circuit and leads taken to an external instrument. The only objections are purely aesthetic.

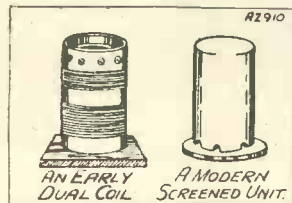
Modern valves are vastly superior to their predecessors, although it is not always possible easily to use them in old sets.

### Special Adjustments

It is obviously a major operation to try to employ a screened-grid valve instead of an ordinary three-electrode type.

And a pentode needs special circuit adjustments before it will act as a satisfactory substitute for an ordinary power output valve.

## IS IT WORTH IT?



The accompanying article discusses the pros and cons of fitting new coils.

But a time-worn detector can safely be changed and probably with very great advantage indeed.

Some of the older components used in their proper conditions will be every bit as good as modern alternatives.

The shielding applied to present-day coils does not improve them as coils. It is a development of design intended to make them more readily adaptable to the high-efficiency circuit arrangements in compact layouts.

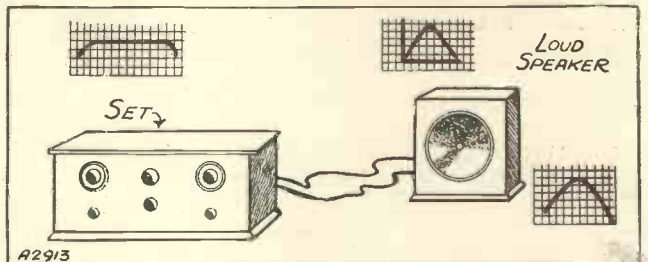
Variable condensers have improved, especially in regard to their dials. And if old ones are scrapped in their favour station-searching will probably be greatly facilitated, although we do not guarantee that, as the listener may have got so conversant with the handling of his old ones that he can do all that could be done with con-

## DO RADIO COMPONENTS WEAR OUT?

YES, some components do tend to wear out. We suppose all would in the course of centuries, but most of them will last the proverbial lifetime.

Valves, dry batteries and accumulators are generally reckoned to be the only "perishables" of radio. But they are all accessories.

## STRANGLER BY A SPEAKER!



This little sketch is designed to show you how a good set may be throttled by an inefficient loudspeaker. The curves indicate the deterioration of the response.

densers of superior mechanical design.

On the other hand, it is difficult to see how anyone, whatever his skill, could accomplish feats of D.X. with tuning controls as inefficient as some that were widely marketed a few years ago. Serious slip and backlash negative the skill of the most expert of operators.

## OVERALL RESULTS

IN the previous article we discussed the advisability of using a modern loudspeaker. An illustration on this page clearly illustrates how effectively a poor quality loudspeaker can ruin the results given by an otherwise perfectly sound set.

Three curves are shown, and these are designed to depict the condition of the energy at different points of the outfit.

The set has what is known as a "straight-line output." That is to say, it provides equal amplification to all frequencies. The middle C note of a piano is rendered with the same comparative strength as a top note of the violin or the bottom note of the 'cello.

### Falling Off

Of course, the "curve" is not absolutely straight, it "falls off" a little at both ends, but it is perfectly straight over the greater part of the useful frequency scale.

The loudspeaker, on the other hand, deals very unevenly with the various frequencies and its curve shows a serious falling off at both ends.

The result is that the set's "straight line" is absolutely mangled. But it is wrong to say that the output of a set can never be better than the curve of its speaker.

Obviously, there may be cases when the output of an inefficient set might be largely compensated for by a loudspeaker giving a kind of "inverse distortion" in comparison with that of the receiver. But it would be in the nature of a coincidence and it is not wise to reckon on that happening. The adjustment of tone in such a way is rather a haphazard method of working.

Of the components the only ones to have more or less definite lives are those which are so made that chemical action can take place.

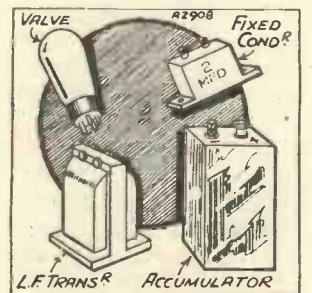
Soldered joints may crystallise, contacts corrode, thin wires break, etc., but these, we suppose, are faults in manufacture. Nevertheless, they do happen.

### "Last For Ever"

At one time it was considered that all fixed condensers, except perhaps mica dielectric types, would inevitably decay. And it is true that breakdown could be reasonably anticipated after a couple of years with almost any of the earlier ones.

But we believe modern manufacturing methods make fixed condensers move into the "last for

## WHICH WILL LIVE LONGEST?



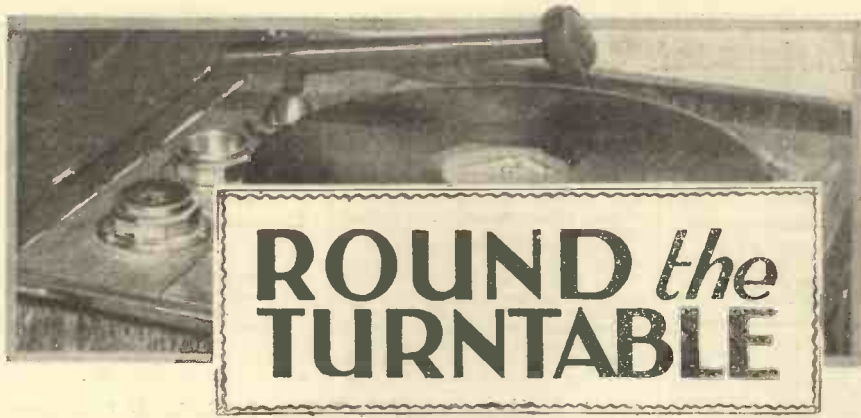
What do you think?

ever" class. And the same applies to L.F. transformers.

So the answer to the question forming the title to this article is plain: they do sometimes, but we do not think they ought to!

## NEXT MONTH

This section will tell you how to add extra de-coupling and smoothing to a set.



# ROUND *the* TURNTABLE

All set for Christmas—Have you got the needle?—A new move in the music world.

By "TONE-ARM."

A MERRY CHRISTMAS to all of you! And as you will see by the various gramophone companies' announcements they are doing their bit to make the season festive. Christmas entertaining may well be left in large measure to the radio-gramophone these days.

True, Gracie Fields' latest number (from her film "Looking On the Bright Side"), entitled "He's Dead But He Won't Lie Down," is not particularly suited to the merry month, and yet I am told that it is her best seller where records are concerned. H.M.V. did well to bring it out last month (or, rather, in October), for they have caught the best part of the year for record sales, and the Christmas purchasing will further increase the record's figures. But what a macabre subject!

### A Mysterious Record

There are many really new ideas being exploited this month, one of which will greatly intrigue the mystic-minded. It is sold in an album of twelve records, but it will cause endless interest as well as a certain amount of amusement to Christmas parties and New Year gatherings all over the country. You should be able to recognise the records from this (when they come out), but I am not at liberty to give full details of the "artist" and so on at the time of writing.

### Coming Events

By the way, I have wind of a further, more important effort on behalf of H.M.V. which I hope will be made public soon. It is the result of a great deal of technical experiment, and the results are truly remarkable.

So look out for a big shout from Hayes before long.

Before we leave the subject of Christmas and the radio-gramophone in connection with that season, let me remind you not to forget your stock of needles before the shops shut on Christmas Eve. It is easy to overlook this important point, and to run out of new needles right in the middle of the holiday.

### Before the Shops Close

True, continuance of the record programmes can go on with used needles, but at what a cost to the surface of the records! Better far to remember and get ninepennyworth the day before the shops close.

### "HOW'S THAT, LADDIE?"



Phyllis Monkman entertains Laddie Cliff on a Marconiphone portable which appears with them in their latest show, "Rhyme and Rhythm."

And talking about needles, what sort do you use? I have gone steadily through the whole umpteen kinds that are turned out for the "benefit" of the gramophile, and have decided that the ordinary good make of loud steel needle cannot be beaten.

I say "good," because there are a remarkable number of poor ones;

needles that have no genuine points, and which damage the record as soon as they are commenced to be used. Either Columbia or H.M.V. can be thoroughly relied upon to produce good articles, and I always keep to one or other of those two makes.

### For Dance Numbers

Tungstyle needles I do not like; they seem to give an artificial harshness to the reproduction that is very upsetting on some types of disc, though if you are to play dance numbers and are not going to listen to them very attentively, the tungstyle does save a lot of bother in changing and is fairly reliable. But it will not play 150 records, or sides of records. The usual is more like 20 or 30, and even then it is doing pretty well, I think.

By the way, I hear that Sir Henry Wood, the veteran conductor of the Promenade Concerts, has agreed to become first President of the newly-formed Music Industries Council.

This Council will represent every section of the musical community: musicians, musical societies, professors, educationalists, manufacturers of musical instruments (including gramophones, radio-gramophones and radio), and music printers, all of whom will work together in the Council for "the encouragement of adequate recognition of the cultural and educational value of music in all its forms."

### New Role

Sir Henry, besides being one of the most popular and beloved of musicians, is an untiring worker, and in this new role he will give his support to a wide range of musical activities, varying from the Music Trades Schools where apprentices are taught the skilled craft of instrument-making, to the promotion of the interests of the professional and

industrial aspects of music.

The acceptance of the position by Sir Henry Wood will be regarded as the best of news by all music-lovers.

The new Council are fortunate in securing for their first President so indefatigable a worker in music's interests.





# "M.W." TESTS

## MACNAMARA

### The "Golden Voice" RECEIVER

A new and remarkable All-Electric Receiver for A.C. Mains.

**A**LL-ELECTRIC radio is an ideal which, unfortunately, will not be within the reach of all for many years to come.

But whereas a few years ago—indeed, one might almost safely say as recently as twelve months ago—the reasons for that were due not only to the fact that the all-electrification of the country under the grid system

of every single listener who has A.C. mains on the premises.

That is perhaps a sweeping statement, but it is not made, in our opinion, without more than ample justification.

Think for a moment of the present-day cost of a really well-designed three-valve receiver. Add to it the cost of an eliminator not only for

H.T. but L.T. as well and you will find that you would not have much change left out of a ten-pound note; in fact, you would probably find that twelve or fifteen pounds would be a nearer estimate of the cost, taking into consideration the valves that would be required.

But even that would not complete the bill. The outfit would be useless without a good

modern speaker, and what with that and the cabinet, well—but why go on?

Surely it must be obvious that any attempt on the part of the manufacturers to produce a completely self-contained all-electric receiver at any figure below about 18 guineas is a proposition worthy of serious consideration? What, then, are the only conclusions that can be drawn from the

#### TECHNICAL SPECIFICATION

**TYPE.**—All-electric table model receiver for A.C. mains 200/250 volts 50/60 cycles.  
**VALVES.**—Four. Screened Grid, Detector, Pentode and Rectifier.  
**CONTROLS.**—Single-dial ganged tuning with trimmer; selectivity control; volume (reaction) control; and wave-change switch.  
**SPECIAL FEATURES.**—Built-in moving-coil speaker of the mains-energised type; "hum adjuster"; provision for mains aerial, pick-up and external loudspeaker.  
**POWER CONSUMPTION.**—55 watts.  
**PRICE.**—Whitewood Cabinet Model, 12 Gns.; De Luxe Model, 15 Gns.  
**MAKERS.**—The Telsen Electric Co., Ltd., Aston, Birmingham.

commendable efforts of an enterprising firm to produce a completely self-contained all-electric receiver—and not just an ordinary receiver at that—for the seemingly impossible price of 12 guineas!

#### Finest All-Electric Radio

It is to the Telsen Electric Company that we are handing the bouquet, for, as a result of the elaborate tests to which we have just subjected their new "Macnamara" receiver, we stand convinced that the finest in up-to-date all-electric radio has at last been brought within the reach of all.

No more graceful compliment could

For an undistorted output of from 2 to 2½ watts the pentode output valve should be an A.C./Pen.

Full-wave rectification of alternating mains current is given by this rectifier. U.U.120/350.

Metallised detector, indirectly heated, and standing up well to long service. A.C.2/H.L.

Screened-grid H.F. amplifier—also of the metallised type. A.C./S.2

would take years to complete, but also to the fact that prices were in many cases prohibitive, the question of price these days is, in our view, an incentive rather more than a deterrent.

#### All That is Desirable

After all, there are few people these days who will dispute the claim that all-electric radio is an ideal, for even if it were only on the grounds of completely trouble-free reception, the claim is completely justified. But all-electric radio these days is something very much more than just a method of obtaining trouble-free reception. It is representative of all that is desirable in modern-receiver practice at a price which we seriously suggest is sufficiently low to warrant the attention

Voltage taps at 200/210, 220/230 and 240/250 volts are provided to suit individual requirements.

So that the user of the set will always remember to switch off before making adjustments, the "on-off" switch is conveniently placed.

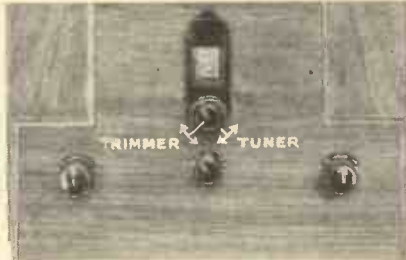
All the power for driving the set comes through the mains plug at the back of the metal chassis.

Any necessary replacement of these 1-amp. mains fuses is a quick and simple operation.

## Macnamara, the "Golden Voice"—continued

have been paid to the go-ahead personality of the man behind this far-reaching policy of bringing all-electric radio within the reach of all, than to

### FIRST STAGE IN TUNING



The trimmer for the tuning control is situated in the most convenient position—on the tuning knob itself.

have called it the "Macnamara" receiver. Only those who are privileged to know the Chief of the Telsen

and in any case it can be regulated by a series aerial condenser to suit local conditions—only one of the many salient features of the design.

Ganged tuning provides for single-dial control, and the equalising trimmer—to our way of thinking a most necessary refinement—is arranged concentrically on the same spindle. The actual tuning dial, which becomes illuminated the moment the set is switched on, is marked in wavelengths.

The only other control, apart from the mains on-off switch, which is very sensibly placed at the back of the chassis with the fuses, is the one on the right which regulates reaction.

It will thus be seen that the number of controls on the "Golden Voice" receiver has been kept down to the lowest number possible under present-

the de-luxe model is available for fifteen guineas.

But the "proof of the pudding" is, after all, the thing that matters most, and although no mere cataloguing of the stations received would, we feel, do full justice to the sensitivity and selectivity of the "Golden Voice" receiver, nor would it convey our genuine enthusiasm for the design as a whole, at least we must chronicle some of the convincing facts concerning our tests.

### Superb Quality

Well, first and foremost, what are the requirements of such a design in the eyes of the would-be user? Would they not be correctly summarised under the three general headings of superb quality of reproduction with, of course, adequate volume on the local stations, a degree of selectivity in keeping with modern regional requirements, and a goodly number of alternative programmes, not just dim and distant squeaks, but genuine 100 per cent. alternatives?

As a result of our tests we can, with confidence, assure you that the "Golden Voice" receiver more than conforms with all these essential requirements. It provides a whole gamut of stations—a programme available to suit every mood and taste, which, as we see it, is all that matters.

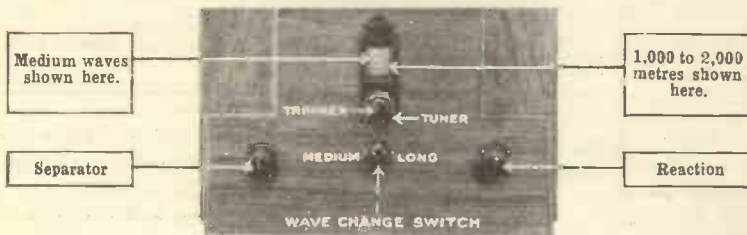
We are confident that "Macnamara," the "Golden Voice" receiver, represents one of the most important contributions that has yet been made towards the popularisation of all-electric radio.

We commend the far-reaching policy of the Telsen Electric Company in bringing all-electric radio within the reach of all, and we congratulate them upon the instrument that has thus been produced.

### ENSURING SELECTIVITY



The aerial series condenser provides varying degrees of selectivity, from the cutting-out of the powerful local station to the easy obtaining of a weak but uninterfered-with foreigner.



Electric Company will appreciate the sincerity behind his commendable attempt still further to popularise radio, and to what extent the effort has been successful will best be gauged by the results of our practical tests upon which we are now going to report.

### Powerful Speaker

Fundamentally, the circuit arrangement of the new "Golden Voice" receiver is that ever-popular scheme of S.G., det. and pentode, but that not an atom of efficiency has been lost in any one of the three stages was abundantly obvious from our practical tests.

The actual arrangement of the circuit employed provides much that is of interest. A loose-coupled aerial with tuned H.F. transformer intervalve coupling is followed by a parallel-fed transformer coupled to a pentode. This, in turn, operates a powerful built-in moving-coil speaker of the mains-energised type, which, from the point of view of quality, leaves absolutely nothing to be desired.

The degree of selectivity is adequate for all modern regional requirements,

These original views of the controls show how easy tuning, volume control and selectivity become with the "Golden Voice." Although there is a control for every necessary operation, there are only four knobs.



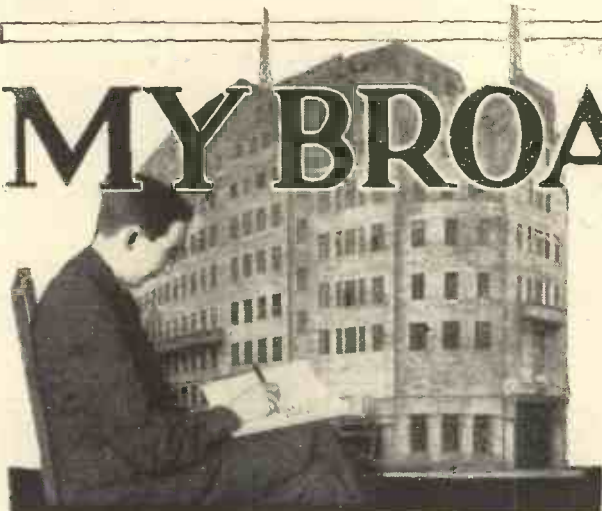
day conditions for the achievement of completely satisfactory results.

The aerial arrangements provide for the use of a mains aerial, under which conditions the set gives a most creditable performance. That alone speaks volumes for its general efficiency, and, incidentally, it widens the scope of appeal of the set to all those who are unable to erect any form of external aerial.

The workmanship and general finish of this set are excellent, and there is ample evidence that nothing has been skimped in order to reach what can only be regarded as the astonishingly low price of twelve guineas. Even



# MY BROADCASTING DIARY



## A Great Christmas Occasion

**T**HIS year the special interest in broadcasting at the Christmas season will have little to do with the actual programmes on Christmas Day. Interest is focussed on December 19th, the date of the inauguration of the Empire Broadcasting Service.

If my information is correct, the B.B.C. has several surprises in store for the Empire overseas, and there is no doubt that there will be a real thrill throughout the Dominions and Colonies. The United States, too, is interested, and it is likely that a considerable part of the first programme will be relayed throughout North America on one or other of the main chains.

Although the B.B.C. is observing the greatest secrecy about its plans for the inaugural programme, I suspect that no effort will be spared to include the voice of Royalty.

## Announcing Items

Whether or not there should be detailed announcing of items in musical programmes before and after is a subject of constant debate at Broadcasting House. In the old days the method followed was more on the lines of the Continental and American systems, which have never allowed for the possession by the listener of adequate advance information ready to hand.

The theory of the B.B.C. has been that the advance publication in its programme papers did away with the necessity for detailed announcements. Now, however, I hear that the Music Department is rather concerned about the effect of last-minute changes, which, by the nature of affairs, cannot be anticipated in any publication.

The new recommendation is that whenever an item already announced has been changed, there should be microphone notice of the new item both before and after. It will be interesting to see whether this suggestion is adopted.

## Governors and Publicity

Members of the B.B.C. Board of Governors, including Lady Snowden, are reported to be manifestly displeased

*Our Own Broadcasting Correspondent keeps a critical eye on the affairs of the B.B.C., and each month, for the benefit of listeners, comments frankly and impartially on the policies and personalities controlling British broadcasting.*

with a good deal of the publicity which the operations of the B.B.C. attract. There is even a suggestion that the Board of Governors may adopt a proposal which was advanced some years ago, and which was supposed then to be advocated by Admiral Carpendale (now Sir Charles), namely, that the B.B.C. should close down on all publicity and entirely disregard the press.

I hope that better counsels will prevail. The B.B.C. Governors should realise that the publicity for the work of broadcasting is the envy of all other public organisations. It is also remarkably favourable.

If an attempt were made to close down on all publicity, and if it were to succeed to the extent of the elimination of all references to the B.B.C. in the Press of the country, this would mean the end of the B.B.C. But, of course, it could not succeed, and could only lead to transforming a general spirit of friendly co-operation into a spirit of intense hostility.

## KEEPING AN EYE ON TELEVISION



Television transmissions are now regularly sent from Broadcasting House, and a special control panel has been erected for them. Here we see the engineer keeping the television currents "within bounds," just as ordinary programmes are checked up.

## Candid Comments on Radio Topics of the Day

There are some things about the B.B.C. which only a friendly Fleet Street ignores.

### Vaudeville Under Fire

I have never been backward in criticising Vaudeville when I thought it deserved it, either on grounds of doubtful taste or dullness. But I draw the line at the endeavour which I understand is being made so to "purify" the Vaudeville programmes as to render them nearly worthless.

There is, I believe, a serious danger that those broadcasters whose main concern is the uplift of the community may succeed in crippling the lighter side of the entertainment. Mr. Val Gielgud's task, as head of the department responsible for Vaudeville, is not an easy one, even when unhindered by those who have no sympathy at all with entertainment as it is known to the multitude. Mr. Sieveking is still struggling with his non-stop experiment, and he should not be discouraged.

It is high time that the interests of real entertainment were properly appreciated by the authorities of broadcasting. This is a point which will be carefully considered before the charter and licence are renewed.

### Politics in the Spring

It is now definite that the B.B.C. will go ahead with its bold, new series of political debates in the spring. Among the subjects to be tackled are Communism, Imperialism, and Internationalism.

The idea is that an able protagonist of each "ism" should be given fifteen minutes in which to state his

am doubtful whether the speakers selected to do the "breaking down" will agree to this.

Certainly Lord Lloyd, who debated with Lord Cecil, declined to admit Lord Cecil's rejoinder. The Communist debate, which is put down for March, will certainly create much interest and controversy, especially as Professor Maurice Dobb will sponsor the Communist case. Professor Dobb was the centre of a big B.B.C. storm about two years ago.

### NOT PHYSICAL JERKS VIA RADIO!



Jazz as an aid to the freeing of stiff joints has been introduced at King's College Hospital. The music is said to help people to forget their stiffness while performing the exercises.

### Broadcasting House at Night

The B.B.C. has wisely decided to reorganise its night administrative arrangements at Broadcasting House. Students of the affairs of the B.B.C. have been aware of a deficiency in the night arrangements ever since the retirement of Colonel Brand, who used to combine the function of host with that of general supervisor of what was going on.

B.B.C. officials themselves have deplored the little irregularities and inattentiveness inevitable to the lack of right organisation in this respect. Now I hear that the matter has been taken in hand and that there will be someone definitely in charge of all the night operations.

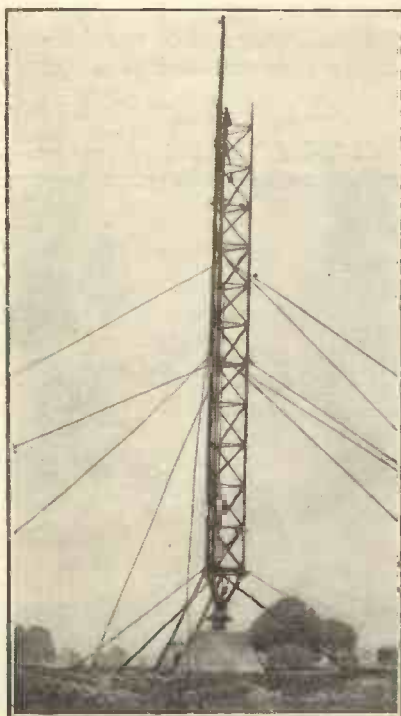
### Disturbing Noises

Some B.B.C. talkers say they are considerably disturbed by the intrusion of noises from dance band orchestras and other musical organisations into some of the Talks studios. This is a serious problem and one requiring urgent attention.

It was not to be expected that Broadcasting House would be perfect, but the efficiency of insulation has never been suspected. I daresay Mr. Noel Ashbridge, the able chief engineer, will put the matter right if he is given a free hand.

### No. 10 Studio

The famous "Big Tree Wharf Studio," at the other end of Waterloo Bridge, from which so much good music has been broadcast, will be retained as long as possible. This is a very wise decision, and one which will be applauded by the great body of listeners which has enjoyed the work of the B.B.C. Symphony Orchestra from there.



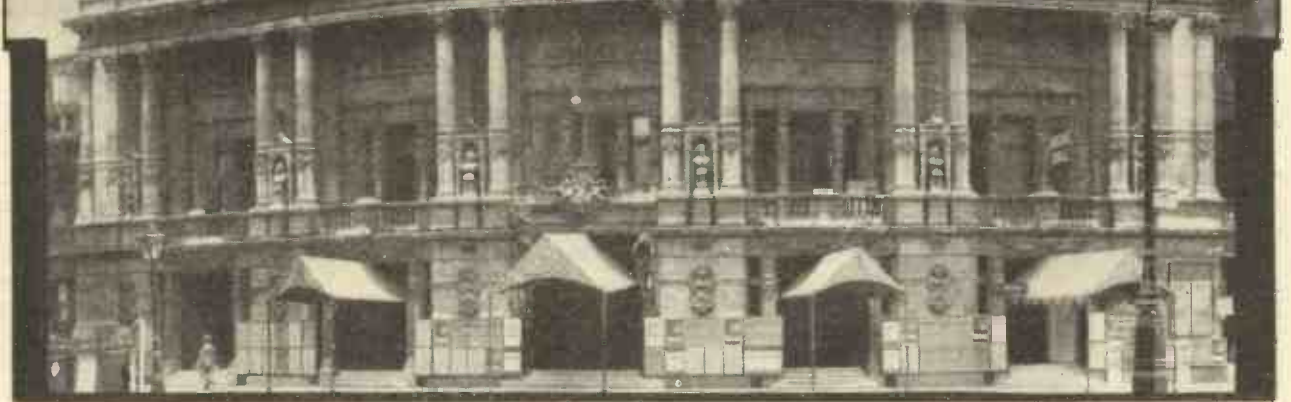
### DOWN IN THE WEST

One of the 500-ft. masts of the new B.B.C. station at Washford Cross, near Minehead, during the course of erection. This station is to be the West Regional transmitter, and should begin regular work during the spring of next year

case. Then a determined and equally able opponent would attempt to wreck the argument in another fifteen minutes. I hear that it is contemplated to give the first speaker the opportunity of a five minutes' reply, but I



# BEHIND THE SCENES AT THE QUEEN'S HALL



TOWARDS the close of one of the recent symphony concerts I left my seat in the Queen's Hall and went round to the little ante-room between the double doors at the entrance.

I doubt if 1 per cent of the hundreds of thousands of Queen's Hall goers during the concert season know of the whereabouts of the B.B.C. gear in the Queen's Hall. One of the Outside Broadcast Staff had made arrangements for me to visit the Queen's Hall control men during one of the concerts, and I took pot-luck in being welcome.

## "Mike" in Mourning

It was, as I have said, near the end of the concert. The difficult part of their work was over for the evening. One of them took me in hand and showed me what was what!

"You noticed the 'mikes' out in the hall, I suppose?" said the control man.

"Yes, but they're in mourning!" I commented.

He explained.

## Carefully Chosen Positions

There are five Reisz microphones above the heads of the orchestra and audience in the Queen's Hall. Only four are readily obvious.

The fifth is known as a sky microphone. It is high up and its position can be moved to pick up more volume from the organ at the back of the

*In spite of the big new concert hall in Broadcasting House, the adjoining Queen's Hall, London's world-famous musical centre, will continue to be used for "Proms." and Symphony Concerts. Take a look round the B.B.C. arrangements there with our Special Correspondent and see how the microphones and controls are arranged.*



Mr. Stanton Jeffries, who is an enthusiastic collector of antiques, usually listens to all the Queen's Hall concerts and personally adjusts the controls which keep loud passages within the bounds of broadcasting technique.

hall, or when above the heads of the audience it responds more to the huge outbursts of applause.

The position is not altered during a concert. The five microphone positions are carefully chosen before each programme. More of this anon.

The Reisz microphones are of the ordinary type, made up in little marble blocks. If a very sensitive

soloist features in the programme, or if the conductor is fussy—and that does not apply to Sir Henry Wood—the microphones are dressed up in little black bags with looped tops. Unless one knows just where to look for them, hung up on their slender cable supports, they don't obtrude themselves.

## Held by Steel Cable

Some of our Continental musicians have such a delicate aesthetic sense that they don't like looking at microphones—and that in spite of the fact that without the microphones and the broadcasting they represent we shouldn't need the Continental musicians!

The microphones are on stranded R.A.F. steel cable. That dispenses with one possibility—one which has often made me shiver with apprehension—that one of the fine wires might break and a microphone in descension would put *finis* to one of the one hundred and fourteen members of the Symphony Orchestra!

## No Chances Taken

The cables are stranded steel and are frequently being rehung so that there is no chance of a break.

Very fine stranded flex is twisted round the supporting cables and is carried along the base of the balcony ledge to the little amplifier room between the double doors.

## A Trap Circuit to Prevent Clicking Noises

Here, under a low, sloping roof, is Outside Broadcasts' apparatus, very similar to what one sees at other B.B.C. broadcasts, football matches and running commentaries.

There are two sets of amplifiers in very sturdy boxes of teak, with carrier handles. An ordinary double-pole double-throw switch of the type used for earthing receivers changes over from one side of the gear to the reserve. There is never a chance of a Queen's Hall concert breaking down because of an amplifier fault. Although the five microphones are balanced, four of them would still give a respectable response.

### B.B.C. Idea

In the little ante-room there is an input panel with the five volume controls. These are a special type of wire-wound potentiometer with a noiseless contact, developed by the B.B.C., and in spite of the enormous amplifier "gain," these potentiometers can be adjusted while the programme is on without causing any scratching noises.

In the right-hand corner of the room, all too small for the important apparatus it houses, is the control panel.

There are two engineers on duty during the Queen's Hall concerts, one of them having to look after the apparatus and the other acting as a subsidiary controller. The final control of volume is done in the London control room, or from one of the listening rooms.

### Oral Indication

Stanton Jefferies, the former B.B.C. Musical Director, usually listens in to all the Queen's Hall concerts, and by means of a master potentiometer on

his listening desk, and a specially calibrated programme meter, he can anticipate the extremely loud and soft passages and turn down or up the master control. He listens in to a moving-coil speaker, working off one of the amplifiers in the control room, and so, apart from the fluttering of the programme meter needle, he has a good oral indication.

The two men in the Queen's Hall listen in on 'phones. These 'phones are not, as you might think, connected

low-frequency stage, an ordinary power valve, transformer coupled to one of the valves in the microphone amplifier. No matter what changes are made in the connections of the 'phones to the output circuit of this trap valve, there can be no effect back on the main amplifier.

### A Chance Remark

You see what precautions the B.B.C. take to prevent you getting even one extraneous click on the Queen's Hall concerts!

When I watched the control man at work I let slip a chance remark about the milliammeters. As one uses a milliammeter in a good quality receiving set to check up overloading, I naturally supposed that these meters used by the B.B.C. for volume indication were also milliammeters, specially calibrated in terms of volume.

### Rebuked!

The engineer mildly rebuked me. He told me that far from being straightforward milliammeters, they were "programme meters" as used in the control room, and not only is there a special calibration, but the needle is so arranged that it responds fairly

closely to current variations coming not more frequently than about twice a second.

This means that the needle swings up and down accurately with change of volume, but does not dart up and down as with the needle of a dead-beat milliammeter.

As he talked of logarithmic readings and decibels like you or I might refer to grid leaks, I quickly changed the subject and apologised for calling a programme meter a milliammeter.

### FEW PEOPLE KNOW WHERE IT IS!



The control apparatus at Queen's Hall is tucked away in a little ante-room between the doors at the main entrance. Throughout the whole of a performance an engineer has to be listening-in or keeping an eye on his programme meter.

across the output circuit of the microphone amplifiers—not directly at least.

They do not always want to wear the 'phones for the duration of the concert, as the meters on the control panel give them the information they need, and if the 'phones were suddenly switched off by pulling out the plugs, this clicking noise would be super-imposed on the transmission.

To prevent this the listening side of the control gear is connected through a trap circuit, consisting of a separate



# THE WORLD'S PROGRAMMES

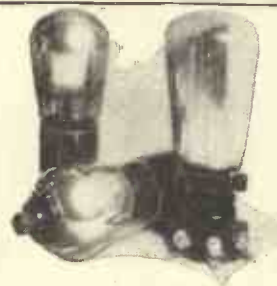
## HOW WHEN AND WHERE TO HEAR THOSE FOREIGNERS



"ONCE UPON A TIME."—A charming study of Fraulein Vordemberge (above) with some of the children who listen to her delightful stories from the studio of the Langenberg station. (Photo: Westdeutscher Rundfunk, Kohn)

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# STATION INFORMATION

Some of the more important news about station changes and station habits gathered from all over the world.

**RADIO-PARIS.** Provisional dates for the relaying of Paris Conservatoire concerts are December 3rd, 10th, 17th and 24th.

**G 33.** Germany's giant Junker aeroplane, G 38, which regularly flies on the Amsterdam-Croydon route, uses 870 metres for direction-finding and 900 or 930 metres for Morse.

**JOHANNESBURG.** Complaint has been made because Afrikaans, the second official language of the Union of South Africa, is used but little compared with English.

**LENINGRAD.** A hurried reshuffle of Soviet wavelengths is taking place in connection with the opening of the Moskow-Noghinsk high-power station.

**TOULOUSE.** Radio Toulouse has applied for permission to use its new 60-kw. transmitter, which has been installed about 20 miles from the town in an old chateau.

**NEW JERSEY.** A "Negro station" devoted especially to this race is proposed as a low-power adjunct to the present main broadcasting stations.

**SWANSEA.** The change of wavelength to 245.9 metres was designed to enable the

Welsh programmes to be received better until the West Regional station takes over this work.

**BRITISH STATIONS.** All the following stations now give a continuous service from noon to midnight: Aberdeen, Belfast, Bournemouth, Cardiff, Daventry National, London Regional, Newcastle, North Regional, Plymouth, Scottish Regional and Swansea.

**GERMISTON.** The air-liner communication station at Germiston (Johannesburg) is fitted for short-wave radio transmission to 'planes.

**WIEDERAU.** This is the actual site of the powerful new Leipzig station working on 389.6 metres.

**TRIER.** This station opens shortly with Leipzig's old transmitter and will share Frankfurt's new wave next to London National.

**PLYMOUTH.** As sharing a wavelength with the powerful Scottish National has not proved satisfactory, Plymouth is to use one of the common international wavelengths.

**MONTREAL.** Ambitious schemes for police radio equipment include a transmitter in the City Hall,

working on 175 metres, and thirty police patrol cars equipped to hear it.

**BERLIN.** It is reported that the German engineers responsible for holding Frankfurt on the same wavelength as the new relay station at Trier will follow the B.B.C.'s plan of tuning-fork control, in preference to crystal control.

**MARSEILLES.** The site for a new Marseilles station at Realtor has now been fixed, in conformity with the Ferrier plan for extending French radio.

**KLIPHEUVAL.** This is the site of the South African beam station that transmits to England. It is fitted for telephony as well as Morse.

**BALDOCK.** The South African "beam" which was originally "focused" on Bridgewater (Somerset) has now been varied to Baldock, at which place excellent reception conditions are obtaining.

**BORDEAUX LAFAYETTE.** The recent opera broadcasts from the Bordeaux Grand Theatre were rendered possible by a subsidy from the General Council of the Gironde.

**RADIO MITRE.** This little-known Argentine station (it is situated at Buenos Aires, and works on 330 metres) was recently received in this country on a one-valve set. (The reception took place between the hours of 2 and 3 a.m.)

**MILNERTON.** The receiving end of South Africa's beam service with England is at Milnerton, six miles from Cape Town.

**THE EMPIRE SHORT-WAVER.** The first broadcast from the new Empire station at Daventry will take place on December 19th.

**KONIGSWUSTERHAUSEN.** A new short-wave transmitter has recently been installed at this, the official centre of Germany's radio network.

**SALONIKA.** The only broadcasting station in Greece is now on the air at Salonika. Call: "Empros Etho Thesaloniki." Power: 1 kw. Wavelength: 270 metres.





# ABOVE 1,000 METRES

*A brief résumé of prevalent conditions on the long waves, showing how excellent programmes can be heard all day from these stations on the higher band.*



ONE of the chief reasons for the ever-green popularity of long-wave stations is that they are not as liable to day and night variations as their medium-wave brethren. In fact, it is somewhat surprising that more sets are not kept tuned to long waves during daylight, but apparently many set-owners do not realise what good programmes are to be had all day for the tuning on this waveband.

Radio-Paris, for instance, starts his day long before you do, unless you are a very early riser. Sharp at 6.45 a.m. he shakes off dull sloth and puts out various gymnastic capers, and many an earnest young Frenchman "jumps to it" on the word of command, whilst most of us are snuggling down for a final snooze.

By a quarter to eight a.m. Radio-Paris has done with gymnastics and weather reports, and is down to solid music, and at this hour, too, you can often catch Huizen doing some good music right at the top of the dial.

### *An Early Starter*

The Berlin Königswusterhausen station is another early-bird; they say he is often going strong soon after 5 a.m., but it seems almost indecent to think of tuning in at such an hour as that! Unfortunately, the Königswusterhausen punch seems to be lacking in vigour these days—or else it is that his neighbours have all developed such power that he is overshadowed by their performances.

Warsaw, too, is still under something resembling a cloud, for although he gets over at a wonderful strength considering the distance, he has not that extraordinary kick behind him that was so noticeable last year. And he has also been suffering from not infrequent heterodyne troubles that mar his otherwise excellent programme fare.

Eiffel Tower, Paris has been consistently good, and so has Kalundborg on 1,153 metres. Incidentally, this latter station is not going to be ready with its new transmitter by Christmas, as had been expected, but will bring this into action in the spring. If it is as good as the present station, it will be well worth waiting for.

Both Oslo and Motala have been keeping their ends up magnificently, and anyone who has not tried for them lately is recommended to repair that omission. But the real peak of reception interest on the long waves has been the Soviet situation.

### *Unfamiliar Programmes*

Leningrad, who last month was reported as doing extremely well, continues to get over with remarkably good effect on 1,000 metres. Several interesting reports have been received of unfamiliar Russian programmes on wavelengths just below this, but as most sets must necessarily fail to pick up anything between 1,000 and 550 metres, because their tuning range does not extend beyond these limits, the lower-than-Leningrad Russians have only a restricted interest.

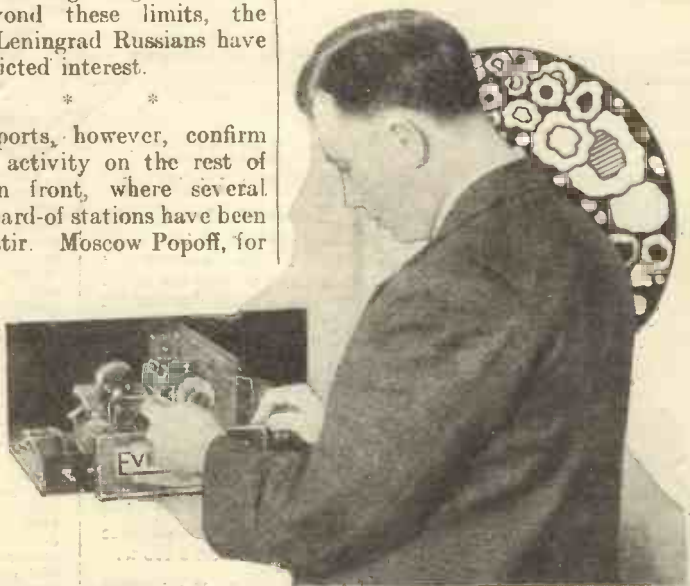
Other reports, however, confirm exceptional activity on the rest of the Russian front, where several almost-unheard-of stations have been creating a stir. Moscow Popoff, for instance, on 1,117 metres, is normally reckoned quite a rare visitor to British aerials, but plenty of listeners

have been intrigued by broadcasts on this wavelength.

The Moscow Trades Union station has become "quite a regular fellow" on 1,304 metres, and the unusual nature of his political views gives a certain piquancy to the talks to be heard from here. In the ordinary way, the only other Russian station worth trying for is the "Old Komin-tern" transmission on 1,481 metres, but a newcomer, sandwiched between this and the Trades Union on 1,304 metres, has recently come to light.

### *The Silent Icelander*

Apparently this is Novosibirsk, or a station using his wavelength (1,380 metres), and if any readers can throw light on the activities of this Soviet newcomer reports will be welcomed. And, incidentally, how are you getting Reykjavik, on 1,200 metres? This Icelander has handed my aerial "the frozen mitt" of late, and repeated trials have failed to raise a recognisable programme from him. Is this a general experience, or just one of those vagaries that make DX reception so fascinating? D.X.







# OTHER PEOPLE'S PROGRAMMES

## No. 1 - Germany

LISTENING to the world's programmes does not necessarily mean seeing how many stations one can get in an evening. Although you may find a great deal of satisfaction in being able to log twenty, thirty, maybe forty stations in a few hours, there is more to it than that.

Many of the foreign broadcasters provide most excellent programmes which are well worth listening to for a whole evening, not only as a pleasant novelty, but as definite alternative entertainment to British stations.

Probably some of the best programmes in Europe originate in Germany, so let's have a look at the way they do things at the Westdeutscher Rundfunk station at Cologne—or Langenberg, if you prefer it!

### Bright and Early

Dr. Bernhard Ernst, the director of programmes, is a great believer in starting the day well, so at 6.45 every morning we drag ourselves, rather reluctantly perhaps, from a warm bed and indulge in a short course of gymnastic exercises to appropriate music. An excellent idea this, which many people would like to see introduced into British programmes.

The main programme usually begins at noon, except on Saturdays and Sundays, when gramophone or orchestral music is transmitted earlier in the morning. Knowing the love which Germans have for music of all kinds, you will not be surprised to find that orchestral concerts take up a great part of the day.

When every café and *bier garden* in Germany has an orchestra which would not disgrace Queen's Hall,

Dr. Ernst has, of course, seen to it that the studio orchestra is one of the best of its kind in Europe. Herr Eysoldt is frequently the conductor, and the programmes as a rule take the form of what the B.B.C. styles "light music."

### Truly Representative

Popular composers such as Waldteufel, Lincke and Humperdinck are always found in the programmes, but a place is also made for the works of young contemporary writers, with the result that the musical programmes are about as representative as they could be.

You will frequently find the evening programme devoted to the best music of other countries, as

witness a recent very excellent programme which was given over to the folk songs of Europe. Sweden, Norway, Austria, Scotland, Ireland, Lithuania, Russia, Hungary, Italy and France were represented in this programme of ninety minutes, which was as interesting in performance as it was in its idea.

German listeners of every kind—from Prussian officer to humblest peasant—are always eager to know of everything that goes on around them. That is,

why the programmes from German stations are full of talks on every subject under the sun.

How would the English listener, who complains because two talks follow one another in the National, react, I wonder, if he had to listen to five or six talks straight off in a programme from Langenberg? And on such diverse subjects as "The Correct Clothing for Winter," "Death Masks," "Fear in the Life of the Child," "From Flute to the Kettledrum," "The Stone Age in Westphalia," and "The Feminist Movement."

But, as a matter of fact, all these talks are extremely interesting, and the German listener has developed the sane habit of listening only to what he wants to hear!

Lessons in English and French, reviews of new books, dramatic talks, and all the other items which we in England have come to appreciate in our programmes, are included in the German curriculum. But there are several points in which the German programme directors in general, and Dr. Ernst in particular, score over the B.B.C.

### Taken Seriously

Radio plays are taken much more seriously by listeners, and consequently a great deal has been done to develop the technique of this new art along original lines.

The radio producer in Germany works with much simpler apparatus than does his counterpart at Broadcasting House. He does not interest himself in numerous studios, effects rooms and control panels, and you will very often find the complete cast, the orchestra, the effects man and

the producer in one and the same studio!

Incidentally, the producer himself is always present to urge on his players to greater heights—even going to the length, if necessary, of waving a threatening or encouraging fist under the nose of some nervous actor!

But radio plays do not seem to suffer at all from this treatment, and because new writers are encouraged to turn out material specially suited to broadcasting, German radio drama has become almost the best in the world.

### Special Events

The Children's Hour, too, has developed along excellent lines. Child performers are often given a principal place in the programme, and it is a usual thing for children to be in the studio, grouped round the microphone, while Fraulein Els Vordemberge tells one of her delightful stories.

The Children's Hour is often followed by some special event such as a relayed visit to the Dusseldorf Zoo, or a reading of children's poems



Unlike many other countries, Germany has so far managed to keep free from the tentacles of "sponsored programmes." Free, that is, in all but one particular.

If you look through the week's programmes you will find the item "sponsored gramophone records," which shows that the German manufacturers have appreciated to the full the possibilities of gramophone record publicity by radio.

Gramophone music, therefore, is regularly heard in the week's programmes.

### Sharing Duty

Outside broadcasts also have an important place in the programmes, and Rudolf Rauher, who is generally in charge of these items, has conducted some very interesting programmes. A description of the first flight of a new aeroplane, a thrilling commentary on the local Fire Brigade fighting a blaze, and such events are often included in the day's events.

In addition to Dr. Ernst himself, seven announcers share the duties of the Westdeutscher Rundfunk. Richard Weimar, Erich Braun and Rudolf Rauher are among those whom you can hear almost any day.

### Some of the Best

For those who have even a slight knowledge of the German language, these programmes from the Cologne studio will be of much interest. And the ordinary listener with no pretensions to being a linguist will find that from this and the other German broadcasting stations come some of the best orchestral, vocal and operatic programmes which European broadcasting has to offer.

So when you next tune in to 473 metres, don't think of Langenberg as "just another name to add to the log," but remember that it provides entertainment which makes an excellent and enjoyable alternative to your "local."



### LANGENBERG'S LEADING LIGHTS

Dr. Bernhard Ernst, the presiding genius of the West German Radio Company, is seen in the centre of the page. At the top, Rudolf Rauher (in charge of outside broadcasts) is giving a commentary on the departure of a new air liner. Radio drama is illustrated on the right, and the remaining picture shows Fraulein Els Vordemberge surrounded by happy faces during the broadcast of the Children's Hour.

(Photos - Westdeutscher Rundfunk, Köln)





# "HIER WEST-DEUTSCHER RUNDFUNK!"

The West German Radio Station of Cologne, at your service. Langenberg transmitting on 473 metres.

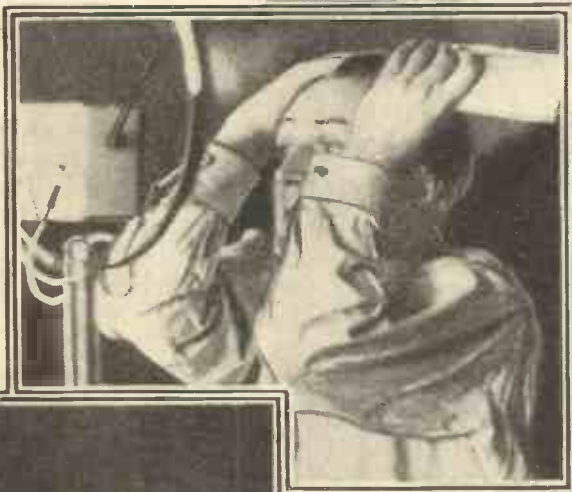
Let's have a quick glance at some recent programmes which show the thought and ingenuity given by the station director and his assistants.



## STAR GAZING

Dr. Ernst, station director is seen on the left of the picture below conducting an interview on the spot by means of a portable microphone.

In the background stands the Westdeutscher mobile radio van, which is in great demand for all kinds of outside broadcasts, that are undertaken at very frequent intervals.



## THE PLAY'S THE THING!

Above are members of the Westdeutscher radio players rehearsing a new production. Radio plays are given a very large place in the German programmes—and very good they are, too. On the left is Richard Weimar in frenzied mood as Don Carlos in one of the studio productions.

(Photos: Westdeutscher Rundfunk, Köln.)



## ON THEIR OWN

The liberty of the studio is often given to child performers during the Children's Hour. The very earnest mouth-organ and accordion band, seen on the right, scored a great success in a recent broadcast.

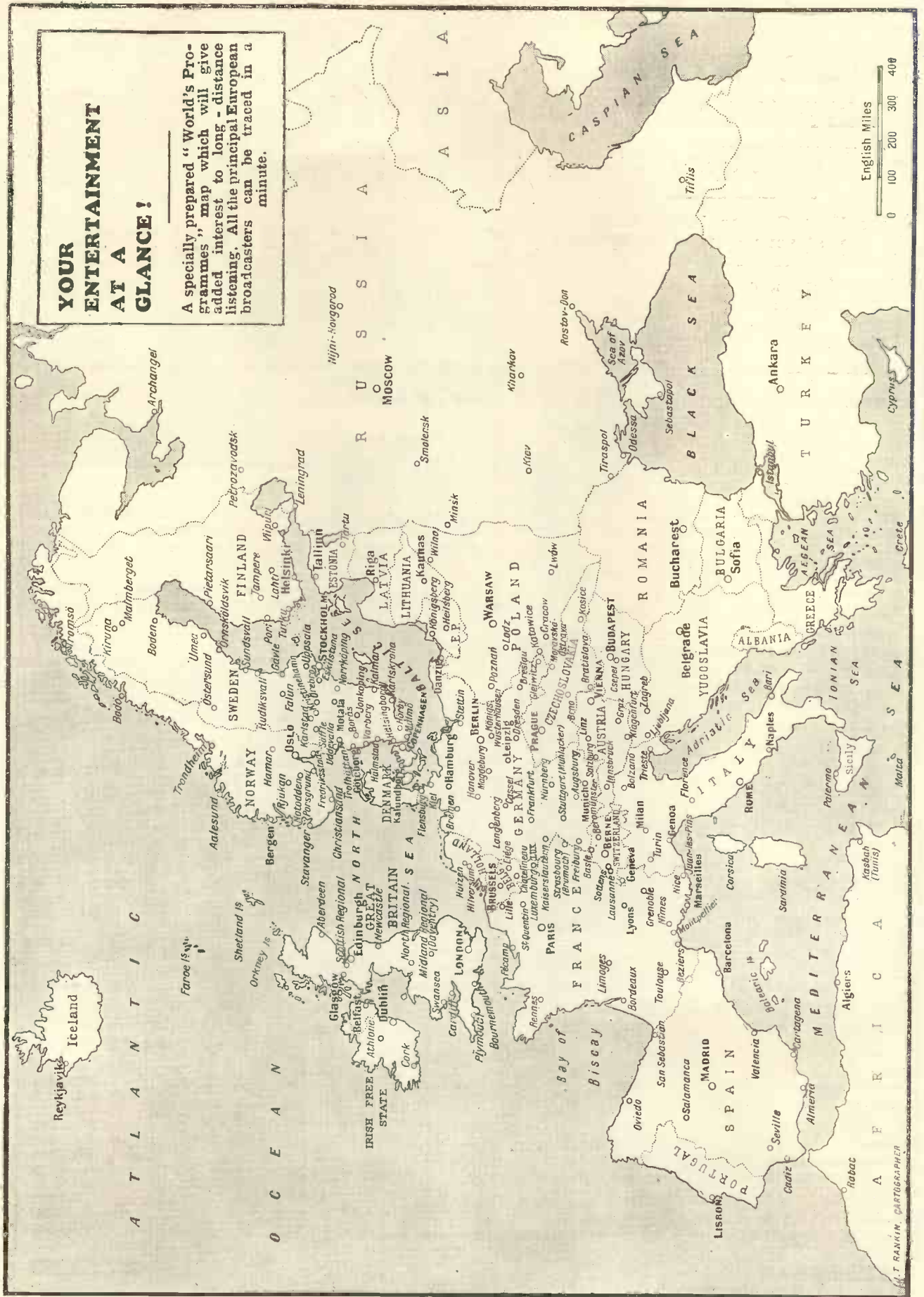


## FIRE!

An unusual outside broadcast undertaken by Rudolf Rauher for Langenberg. A running commentary on a demonstration of fire-fighting given at Cologne with the aid of the ubiquitous portable mike.

**YOUR ENTERTAINMENT AT A GLANCE!**

A specially prepared "World's Programmes" map which will give added interest to long-distance listening. All the principal European broadcasters can be traced in a minute.



J. T. RANKIN, CARTOGRAPHER





# How to use THE "M.W." DIAL DIAMONDS

**A unique and important contribution to the calibration of your set, which makes the logging of any station a matter of moments.**

"WHAT'S all this?" you say, as you turn our Free Gift over. "What good is it?"

Well, it is the naggiest idea in radio station-finding you have ever seen! It takes all the sting out of that irksome "identification" business. As soon as you have tuned a station in it tells you *what* station. Or if you want to try for a certain station it tells you exactly *where* to turn the dial to listen for him.

### Few Pleasurable Minutes

And when you have fixed up your own Dial Diamond, in a few minutes pleasurable spent you will vote this idea for a simplified tuning chart to be the neatest, simplest and most helpful aid to station-finding you have ever come across. It puts new life into your set-handling.

The marvel is that nobody ever hit on the scheme before.

Let us explain how easily it enables station-placing to be done. If you look at one of the Dial Diamonds—there are two of them, one for medium and one for long waves—you will see it has sloping lines running across it, from right to left, and every line represents a station.

### Placing Stations

Just glance, for instance, at the long-wave Dial Diamond—the one on the back of our Free Gift. At the bottom of it is the line standing for Leningrad, Russia. Near the top another line stands for Huizen, Holland. And all the other long-wave stations each have a line, too, sloping left and right across the Dial Diamond.

And note this. Where stations are comparatively close together in

wavelength—like Motala and Kasbah—the lines are close together. So you can see this ether-crowding and wavelength congestion they talk about by comparing the closeness of the lines. (It is very plainly shown on the medium-wave Dial Diamond, isn't it?)

### Practical and Easy

And now comes the practical and easy part of using these different station-lines.

Take a medium-wave station you can receive easily—let us say it is London Regional.

What's his dial reading? It varies a bit on different sets, of course, but we will suppose that on the set we are using the reading is exactly 58. Then all we have to do to start our medium-wave Dial Diamond is to put a neat little dot on the London Regional line *where it crosses that station's dial-reading line.* (At exactly 58 in this imaginary case.) Then we take our next easily received station

—perhaps it is Midland Regional, and the dial reading happens to be 71. Well, we dot the Midland Regional's line at the 71 mark, and carry on.

**STATIONS  
FOUND  
SOON**

**INTEREST  
ADDED  
TOO**



The fact that the "M.W." Dial Diamonds make it the simplest matter to tune at once to any station will give listeners an added interest in the details of the broadcasting stations of the world. At the head of this page you see the engineer in charge of the Frankfurt-am-Main station, which is now working on 259 metres with a power of 17 kw.

The top photograph of this diamond is of a portion of the ultra-modern design in the Rundfunkhaus at Berlin. To the left and right are typical switchboard and power equipments, as used in modern stations. Below is a fine new picture of Leipzig's transmitter, which has recently started transmissions on 389.6 metres with a power of 120 kw.

## How to Use the "M.W." Dial Diamonds—continued

Next. Right up near the top of the dial we may find North Regional—dial-reading, say, exactly 87. Right! Dot on the 87 line, where it crosses the North Regional line.

And so we carry on, marking in the first few easily-received well-known stations. Put in half a dozen dots or so (the more the better) like the specimen Dial Diamond shown on the first page of our Free Gift.

### At a Glance

It shows a typical Dial Diamond with only five stations marked on. But look at that pencilled line that then connects all those dots together. That is the kernel of the whole matter.

As soon as you have got your known stations marked on, you draw in a neat, gently-curving line to join their dots together, and that line gives you all the UNKNOWN

readings, to begin with. And when you have put them down the Dial Diamond tells you from that exactly at what dial-readings all the other stations should come in! No wonder Diamonds are trumps!

### Ease and Certainty

The old involved tuning charts used to try to give the same information, but they were an awful bore in comparison with a Dial Diamond.

There were no "station-lines"—only a lot of wavelength markings (which you had to put in yourself) and which were a pestilential nuisance to look up in a book or list, as compared with the ease and certainty of having a separate line for every station's wavelength.

The great thing to remember is to place the first few stations accurately. Get their exact dial-readings, and, of

to draw a line from insufficient data.

If you can get ten or a dozen well-spaced station-dots before you begin it, all you will have to do is to connect them together in an almost straight curve, which you will then find to be amazingly accurate in use.

### Dead Straight

Incidentally, the line in question would be dead straight, and drawn with a ruler, if our "straight-line" condensers were really straight-line frequency, and were not thrown out by various manufacturing and technical difficulties. But with a modern condenser of good make you will find the line curves only gently, and with no unexpected "humps" at all.

As soon as you have the line drawn lightly in you know whereabouts the condenser should be set for every station on the chart. And the more stations your set can receive the more accurate does the line become as an aid to getting the others.

You will find, in fact, that with a Dial Diamond accurately drawn up it is possible with a good set to "place" and definitely identify dozens of stations that otherwise would have remained unknown. For with the curve you only need to know the dial-reading to see at once what station "lives" at that particular spot!

### Stick to One Dial

Finally, a word as to sets with several tuning dials. Which dial-readings should be taken in such cases?

It is necessary to stick to one dial, of course, and take all your readings from that, because for any given station the dial readings will not be quite the same.

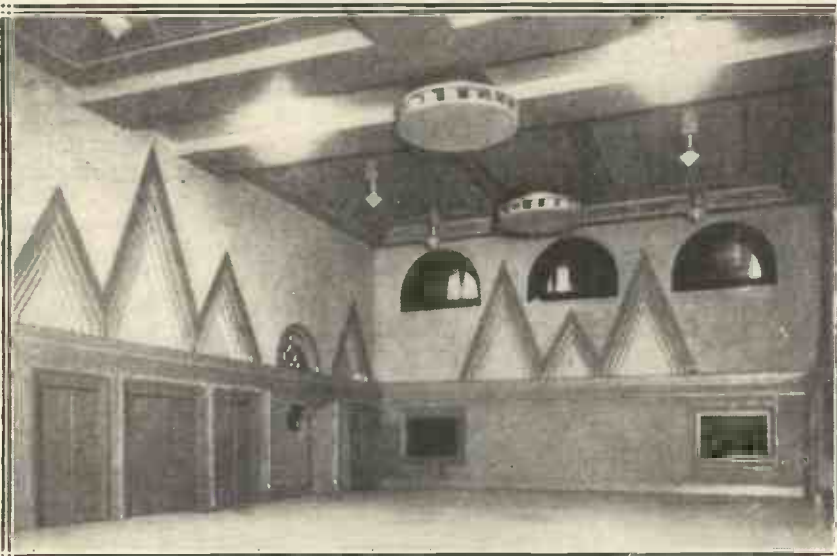
In general it is better not to use the first or "aerial" dial, but its neighbour, the second (or H.F.) stage.

And if you wish to add a last touch of real accuracy in tuning, and you have a low-reading milliammeter, remember that with this you can get extremely sharp readings usually—far better than judging by ear.

The procedure is, of course, to insert the milliammeter in the plate circuit of the detector, and note how its needle behaves when a station is tuned in accurately.

There remains the question of 180-degree dials. This and other information regarding the use of Dial Diamonds will be given next month.

### RADIO ROMA—THE PRIDE OF ITALY



Italy has not been slow to follow the lead of other countries in the construction of super buildings for radio. You see here a studio in Radio House, Rome, which reflects the general tendency to extreme modernistic appearance.

stations' positions! Because every British or foreign station on the Dial Diamond is now linked by that line with one special dial-reading.

Take the 71 dial-reading, for instance. Who is that unknown station that is heard exactly on the 70 tuning position? The Dial Diamond will tell you at a glance. Probably Midland Regional or Sottens—depending on how your curve curves, which will have been decided by the dial positions of the stations you have already marked.

So it all boils down to this. You know a few stations and their dial-

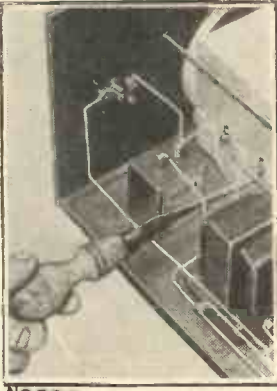
course, be really sure that it is the station you think it to be!

### Amazingly Accurate

These early stages of preparing the Dial-Diamond are all-important, for once a good, accurately-placed line has been drawn the rest of the stations fall into place with quite uncanny certainty.

As for the actual drawing of the line, it is impossible to go wrong if you have a fair number of reasonably spaced known-station dots to help you at the beginning. But don't try





# ON THE MEDIUM WAVES

*Leipzig, the Whispering Soloist—Thanks for Turin—A Glut of Good Fellows—Power in Reserve—No Lack of Yodelling.*



SINCE the coming of Leipzig's big station, with its wavelength change-over that placed Frankfurt next below the London National, and Leipzig himself between the Midland and Scottish Regionals on a wave length of 389.6 metres, the heterodyne and "whistle" situation on medium waves seems to have become worse. The stations are now so tightly packed and have such powerful outputs that any unrest anywhere on the waveband seems to cause a ripple of uneasiness over the whole of it.

Numbers of listeners to the London National have decided to dislike Frankfurt! He may be excellent "on-Main," but he is distinctly unwanted as whispering soloist on London National's wavelength.

It is not apparently because he wanders or misbehaves in any way, but his power of 17 kilowatts (as compared with his predecessor's 2) is bound to affect the London National's quality adversely.

If the Madrid Conference, while sitting, had needed a practical example or two of the amazing state of the present ether congestion they had only to put a set on to collect any amount of evidence, any night and any hour!

It must not be forgotten, however, that high power and plenty of stations have their compensations in no uncertain way. Almost any old sort of set can get from these two factors a wide variety of ether-borne entertainment. Starting at the bottom of the dial down Fécamp way and finishing off at, say, Vienna or Budapest, what a wonderful variety of programmes and personalities can be encountered on the medium waveband.

Near the bottom of the dial both Nurnberg and Trieste have been going beautifully on nearly every night, while Turin, Heilsberg and Hilversum have all to be thanked for their punch and also for their consistency.

Round the neighbourhood of the middle of the dial there has been a glut of good fellows.

The little group—Goteborg, Breslau, Poste

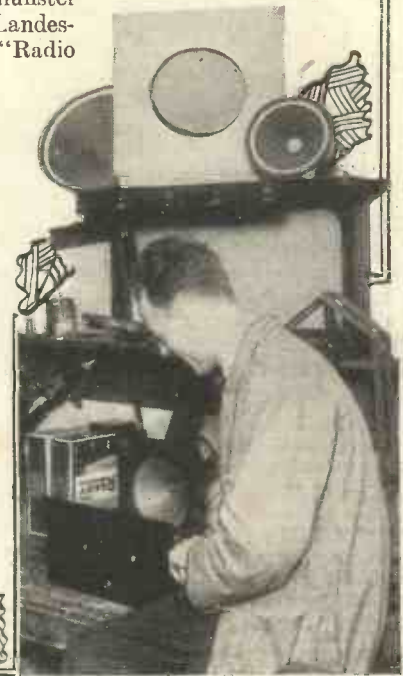
Parisien, and Milan—have been a joy to the selective set-owner, while Strasbourg, Barcelona, Stuttgart, Hamburg and Toulouse have all said their pieces with great distinctness and no uncertainty.

As for the new Leipzig—well, they say he still has some power in reserve, and, if so, 389.6 metres is going to be a hot spot when he lets himself go all out!

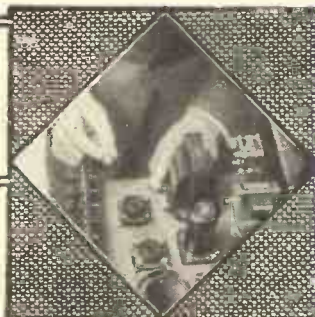
Somebody seems to have gingered up the Swedish stations, too, and apart from Stockholm, on 436 metres, there has been excellent medium-wave reception from Sundsvall, on 542 metres, which is astonishing in view of the comparatively low power employed there. (A matter of some ten kilowatts). Another top-of-the-dial station, Prague, on 488.6 metres, threatens by his clear forcefulness to make us all learn the Czech language when tuned anywhere in the immediate vicinity of that wave length!

Both of the Swiss big-fellows, Beromunster ("Schweizerischer Landes-sender") and Sottens ("Radio Suisse-Romande"), have been in first-class form on 459 and 403 metres respectively. And as their compatriot will soon be in action at Tessin, there should be no lack of yodelling items this winter. (Incidentally, these real mountain yodellings are very entertaining, and if you happen to tune in to an item of this kind you will find it well worth pausing over).

**"THE WORLD'S PROGRAMMES" SECTION**  
Owing to the large demands made upon our space by the various articles which call for inclusion in this Christmas Number, the World's Programmes Section has, unfortunately, had to be somewhat curtailed this month. Next month's World's Programmes Supplement will, however, be one of special interest.



# NEWS FROM HOME AND ABROAD



**PALISADES, NEW JERSEY.** The broadcasting station erected by the Freshman Co. is unique in that the building is exactly like a giant "Freshman" receiver.

**CHELMSFORD.** The G S W station shortly to be replaced by the Empire station at Daventry commenced its

*NEXT MONTH'S*  
**MODERN WIRELESS**  
will be another  
**GREAT GIFT NUMBER**

OUT—DECEMBER 31st

regular transmissions in November, 1927, on a wavelength of 24 metres.

**TANANARIVE.** Short-wave enthusiasts who would like to "bag" Madagascar



should try for Tananarive, on 52.7 metres, at the following times:

Sun. 07.30-09.00.  
Tu. 08.00-08.45 & 15.00-16.00  
Wed. " " " 15.00-16.00  
Th. " " " 15.00-16.00  
Fri. " " " 15.00-16.00  
Sat. " " " 17.30-19.00

**VIENNA.** The new 120-kw. station at Bamberg is ex-

pected to be testing before the end of the year.

**GERMANY.** For the first time since broadcasting began there was a drop in German licences for the autumn quarter.

**GERMANY.** The centralisation of the various broadcasting concerns is now reflected in the announcement when all stations are linked, the common call being: "Hier ist der Deutsch Rundfunk."

**SKAMLEBAEK.** Interesting tenth-birthday programmes were recently sent out from this station on 31.51 metres. Skamlebaek, O X Y, is comparatively new, but it took over the work of Lyngby, O X Y, which commenced Danish broadcasting in October, 1922.

**BUDAPEST.** The Budapest No. 2 station (at Csepel, Hungary) has applied to have its wavelength shifted from 210 to 840 metres.

**VIENNA.** Though not frequently heard in this country—as she generally takes daytime duties—there is a lady announcer at Vienna who steps into the breach if one of the five men announcers fails.

**KALUNDBORG.** Owing to unforeseen circumstances the new station at Kalundborg will not be ready at Christmas, as at first hoped. April is the date now fixed provisionally.

**COPENHAGEN.** Experiments in psychology, analogous to those sponsored by the B.B.C. some three years ago,

were carried out from Copenhagen last month.

**SALISBURY, RHODESIA.** Recent tests with a view to finding the best wavelengths and situations for broadcasting in the Salisbury area lead officials to believe that a satisfactory programme service could be established there.

**SYDNEY, N.S.W.** The curious "call" of the Sydney station (receivable direct on a good short-waver at certain times of the day) is that of the kookaburra.

recent remarkable daylight reception of Stavanger was not due to its (then) comparatively long wavelength (542 metres), as was at first supposed, as other Swedish relays are now getting over uncommonly well on wavelengths below 250 metres.

**NEW YORK.** The popular W E A F station on 458 metres is threatened with



**EMPIRE STATION CALL-SIGNS.** The following have now been allotted to the new Daventry Empire station:

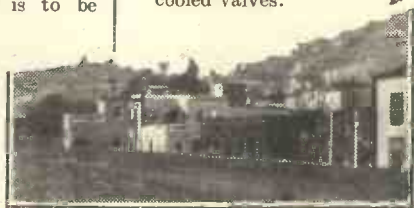
G S A = 49.6 metres, for Canada and South and West Africa.  
G S B = 31.5 metres, for Canada and West Africa.  
G S C = 31.3 metres, for South Africa.  
G S D = 25.5 metres, for Australasia.  
G S E = 25.3 metres, for India.  
G S G = 16.9 metres, for India.

**KIRKUK.** The pipe-line connecting the petroleum wells of Kirkuk with Tripoli and Haifa (Palestine) is to be linked by a series of radio stations, connecting the chief places en route.

**SWEDISH RELAYS.** The

severe interference from X E R, a super-power station to be opened in Mexico. X E R will be far more powerful than any other station broadcasting in America, the almost fantastic power of 500 kilowatts having been named as its limit.

**LATVIAN** post office announce the opening of a new station near Madona in Latvia. The power will be 10-kw. to be increased to 50-kw. at a later date. The wavelength used will be 875 metres. This station will relay the Riga programmes. The station was built by the Latvian P.O. and uses Russian water-cooled valves.





# INTERFERENCE INTERVENTION!

Proving that it's not much good knowing all about the stations if you can't separate them from interference when you get them! Moral: Make your set more effective. How are you to do it? Why not read the article below and see how it's done!



lengths and so becomes a source of interference at the same time.

It is no unusual thing for the local to come in as a background to quite a number of foreigners, and sometimes one foreigner will make a background to another.

In common parlance, "they both come in at once."

Well, it all goes under the head of "modulation" interference. "Modulation" because there is no interference from this cause unless a station is modulating, namely, something is being "put on the air."

### Beat Modulation

That leads up to type of interference number two, for some of the most difficult-to-move interference can be caused by stations, whether they are modulating or not. What I have in mind here is heterodyne interference, which is caused by the carrier waves of two adjacent stations, so that the question of modulation does not enter into the matter.

In practice it takes the form of a high-pitched whistle, which is tuned in with the station on which the interference is taking place. If two strong carriers are received at once, a beat modulation is effected which has a frequency equal to the difference of the frequencies.

If the two stations have a 5-kc. separation, then the frequency of the interfering whistle will be 5,000 cycles. The nearer the wavelengths of the two stations, the lower the interfering note.

### "Monkey Chatter"

The more sensitive an outfit is to really high frequencies, the more heterodyne interference that is likely to be experienced. A set which cuts off almost completely at, say, 5,000 cycles will not be bothered by heterodyne whistles of 8 or 7-kc.

Type of interference number three also occurs when two stations are working on wavelengths fairly close together, but it is necessary for one of them at least to be modulating. It is often termed "monkey chatter," no doubt because there is nothing intelligible about it.

It is very reminiscent of a stage whisper in which the words are very rapidly spoken (that is, of course, when the modulation is speech).

It is caused by what are usually assumed to be side-bands heterodyning with the carrier of another station, as distinct from two carrier waves themselves heterodyning.

Unfortunately, this type of interference is the one which is probably due to the least understood causes.

### Varying Field

Lastly, we come to interference from static, and this is taken to include man-made static as well. It covers all the clicks, crackles, bangs, buzzes, whirrs, pops and so forth which are picked up by the aerial.

Electrical disturbances of the atmosphere cause nature's static, and all the man-made static is due to electrical machinery of some sort or the other, in which

sparkling is taking place or which has a strong varying field around it.

Dynamos, motors, tram-trolleys, vacuum-cleaners, bells, welding-plant, etc., etc., are all potential sources of static interference.

So there are the forms of interference that are likely to trouble you. A fearsome array, perhaps, but, as already stated, all open to a little persuasion.

Of course, the particular set on which interference is experienced has a lot to do with the extent to which it can be reduced. Some sets are more liable to it than others; witness the example given in connection with heterodyne interference.

It is just a matter of degree, and the following suggestions will always apply, but to varying extents. Advice in connection with modulation interference is practically obvious.

### Innumerable Ways

It is simply: make the receiver more selective. There are almost innumerable ways of doing this.

You can shorten the aerial, or use a condenser in series with it. If one is already present, set it at a lower value if it is variable, otherwise, replace it by a smaller one.

Then you can use lower (that is, nearer the filament end) taps on the coils when these are present in the set. And a good idea, particularly when there is a pre-detector volume control, is to cut down volume with the volume control and then bring it up again by increasing reaction. The increase of reaction will serve at the same time to sharpen up tuning.

### Tuned Filter

Finally, an extra tuned circuit can be added, or in the case of sets without H.F. amplification, an H.F. unit can be attached. This will supply greater volume at the same time as another tuned circuit.

Now for interference number two—heterodyning. The usually applied cure for this is to sharpen up tuning until the top frequencies are cut out, when the heterodyne whistle goes with them.

Alternatively, when there is no objection to such a loss of the "high stuff," a by-pass condenser, either somewhere inside the receiver or directly across the loudspeaker, will help. A much better and more scientific method of tackling heterodyne interference is to use a tuned filter circuit.

This is a circuit which by-passes only the frequency of the heterodyne and so does not upset quality much. Since the official separation of stations is 9 kc., most heterodynes have a frequency around this value.

### Winding the Choke

So the filter is arranged to be tuned to frequencies around this value by means of a .0005-mfd. variable condenser. The choke should be of low resistance and have an inductance of about 8 henries.

A suitable former to wind such a choke on would be 2 in. in diameter and 1½ in. long, with cheeks ¾ in. deep. Four thousand turns of 32 or 30 gauge D.S.C. or

D.C.C. wire have to be wound on to this.

Connect condenser and choke in series and then wire them across the loudspeaker, or across the output transformer primary if a low-resistance speaker is employed. Adjustment of the variable condenser should be made quite slowly.

The "monkey chatter" type of interference is not quite so easily got rid of. Increasing selectivity as for modulation interference will help, and the filter just described will also act as a reducer.

### Grin and Bear It!

When used for this purpose it is usually better to connect it across a high-impedance anode circuit of one of the valves preceding the output valve. Across the anode resistance of a resistance-capacity coupled valve is quite a good position.

So far as natural static interference is concerned, there is nothing that can be done. One has to grin and bear it!

Also, the best cure for man-made static is to move away from it! Failing this it is best to tackle the trouble at its source and not at the receiver, as there is not much that can be done to the receiving installation to cut the noises out.

Altering the direction of the aerial and moving its position when the source of interference is very local are the most helpful suggestions. Screening and by-pass condensers are the best remedies and should be applied to the source of the man-made static. In fact, you may have to interfere to stop the interference!



"I WISH I could cut out that interference!" And so, no doubt, do a good many other long-distance listeners, for interference of one sort or another is very rife in radio listening at the present time. And unfortunately a lot of it can't be stopped. But don't despair! Most of it can be greatly minimised and some can be got rid of entirely.

### The Receiving Link

A good bit of it is caused by the large number of stations working at present, their huge powers, and their proximity in frequency. But we are not able to alter this—even the international radio powers—that-be seem powerless in all but name!

So it is to the receiving link that we must look to improve matters, and it is by no means a hopeless task which confronts us.

But before considering how to overcome interference we shall do well to consider first the various forms it may take.

The word "interference" covers a lot of sins. Anything which butts in on the programme we want, local or foreign, is designated by the word "interference."

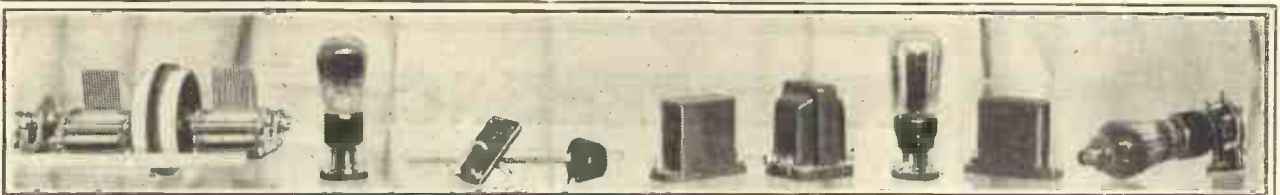
It is mostly on the foreigners that it makes itself felt, but the suggestions I am going to make are just as helpful where the local is concerned. Usually the local, however, is strong enough to drown a good deal of the interference.

### Drowned Foreigners

And talking of drowning brings us to the first type of interference, what we may term "modulation" interference. The local is often so powerful that it not only drowns interference to itself, but also drowns foreigners on nearby wave-







**ZEESEN.** For working to America on short waves, two beam aeriels have recently been erected at Zeesen.

**STAVANGER.** This low-power Norwegian station, which occupies the wavelength of 240.6 metres (just below Belfast), has been coming over with phenomenal punch considering its low power.

(Stavanger was selected as the site for Norway's transatlantic radio station owing to its favourable coastal situation.)

**RADIO-PARIS.** M. Déhorter, the "Unknown Speaker" who makes such a success of R.P.'s outside broadcasts, was born in London.

**POSTE PARISIEN.** The already famous "electric organ" uses four hundred oscillating wireless valves instead of pipes or reeds. Its three keyboards have 76 stops.

**LEIPZIG.** This much-talked-of higher-power transmitter has now been working for about a month, and very favourable reports of reception have been received from all quarters.

**WARSAW and PRAGUE.** The distinction of employing more power than any other station in Europe—formerly shared by Warsaw and Prague for their 120-kilowatts—now belongs to Leipzig, which employs 150 kilowatts, on 389.6 metres.

**FRANKFURT-ON-MAIN.** The recent increase of power from 2 to 17 kw. has resulted in a great increase of popularity in this country of the Frankfurt programmes. The wavelength, formerly 389.6 metres, was changed to 259.3 metres at the end of October.



## FROM HERE, THERE AND EVERYWHERE

*Last-minute flashes from the world's broadcasting stations to keep you up to date with all changes and interesting happenings.*

**MILAN.** Mussolini himself opened the new Milan station, which is being received well in this country. The power is 60 kilowatts as against the former 7 kw.

**325 METRES.** This is the star region on the medium waveband for foreign reception, no less than three high-powered stations being located near this wavelength.

### THE JANUARY NUMBER OF "MODERN WIRELESS"

*will be on sale December 31st.*

**ORDER YOUR COPY NOW**

*Another **SPLENDID GIFT.** Another illustrated "WORLD'S PROGRAMMES" SUPPLEMENT.*

They are Breslau, 325 m.; Poste Parisien, 328.2 m.; and Milan, 331.5 m. Each employs 60 kw.

**NEW YORK.** A new type of "two-faced" microphone (capable of "hearing" equally well in front or behind) is being tried for the Metropolitan Opera broadcasts this season.

**CAPE TOWN.** One of the greatest difficulties in giving an adequate and economical radio service to Cape Town is the fact that, whatever power is used, about three-quarters of the transmission is wasted over water, because of Cape Town's situation on the peninsula.

**RADIO NATIONS.** Tests have recently been carried out with Magaya, Japan, in connection with the League of Nations' programme.

**KUALA LUMPUR, F.M.S.** This station has been working regularly on 50 metres on Sundays from 12.00-14.00, and Tuesdays and Fridays from 11.30-13.30.

**MOSCOW.** A new Moscow station has recently been testing on 848.7 metres.

**CSEPEL.** The Budapest high-power station now being built at Csepel will work on 840 metres when completed.

**TEDDINGTON.** Standard frequency transmissions of 1,000 cycles per second are

now radiated from G 5 H W on 830 metres on the second Tuesday in each month. Commencing time, 10.40 a.m.—announcements in Morse code.

**EMPIRE STATION.** On Nov. 11th a B.B.C. official left this country to visit the various parts of the Empire to ascertain how Daventry's new short-wave station will be received there.

**JAPAN.** Figures just issued show that Japan's broadcasting activities are progressing apace, and there are now over a million and a quarter licensed listeners.

**ROSTOV-DON.** This station's wavelength, 848.7 metres, has recently been used by the new Moscow-Noghinsk station on tests.

**BERLIN.** The ultra-short-wave station, working on waves between 6 and 7 metres, has been transmitting at the following hours: Mondays and Thursdays, 10 p.m. to 11 p.m. (22.00-23.00); Wednesdays and Saturdays, 7 p.m. to 8 p.m. (19.00-20.00).

**G 5 S W.** This station, which for five years has carried out experimental short-wave Empire broadcasting from Chelmsford, was not built by the B.B.C., but was rented from the Marconi Co.

**TIFLIS.** The transmissions have recently been heard on 1,048.2 metres, instead of 1,071 metres, the allotted wavelength.

**U.S.A.** Listeners who happen to sit up late are reminded that many American, and even South American, stations have been getting over to this country on medium waves. So after Europe has closed down it is well worth switching on and trying if you have never yet bagged America direct.

**AUSTRALASIA.** The Empire programmes for the Australasian zone will be sent out from the new Daventry short-waver from 9.30 to 11.30 a.m. (09.00-11.30).

**INDIA.** The time for transmission of Empire programmes to India, after Dec. 19th, has been fixed for the two hours commencing 2.30 p.m. (14.30-16.30).

**AFRICAN ZONE.** African Zone Empire programmes from the Empire station at Daventry will be radiated from 6 p.m. to 8 p.m. (18.00-20.00).

**WEST AFRICA.** Short-wave programmes for British West Africa listeners will emanate from Daventry from 8.30 p.m. to 10.30 p.m. (20.30-22-30).

**CANADA.** Times of transmission to Canadian zone have been fixed at 1 a.m. to 3 a.m. (01.00-03.00).





**R**ADIO-TOULOUSE, its concerts—its announcer—its gong. Is there a listener in Europe or Africa who doesn't know them all?

Whether you go into a restaurant at Tunis, a café at Marrakech, a drinking saloon at Liège or at Luxembourg, you are certain to hear the fervid, expressive voice of Jean Roy dominating everything.

It can be said without fear of contradiction that Radio-Toulouse is the most popular of all the French broadcasting stations. The rich variety of its programmes, its enterprise, its liveliness and its extraordinary activity have justly earned for it its reputation of being one of the premier stations of France, if not one of the best in Europe.

**Extensive Range**

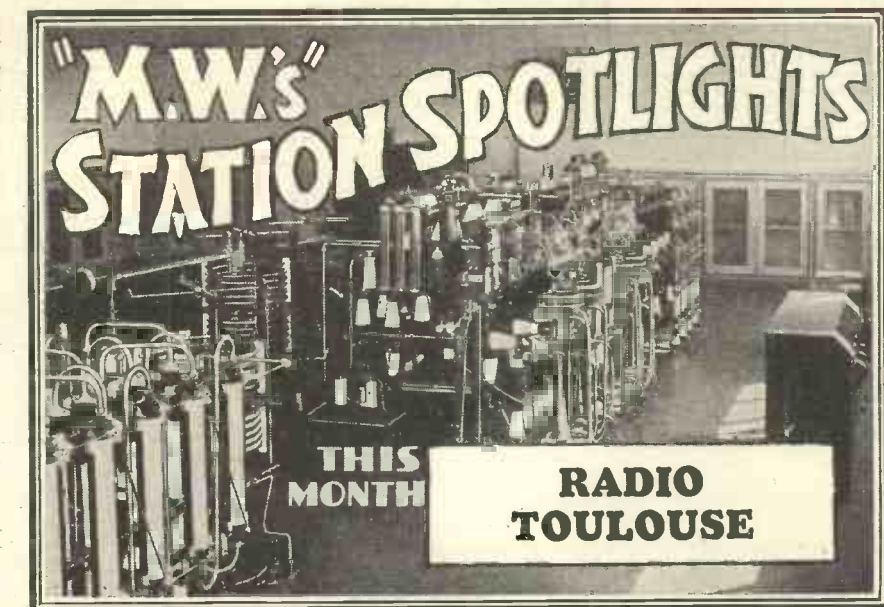
It is a fact that, since 1925, Radio-Toulouse has been most representative of French broadcasting abroad. This is due in a large measure to the co-operation of certain bodies, to the many friendships that have sprung up around it, and to the constantly renewed support it has received on all hands.

Founded on April 15th, 1925, by the "Syndicat d'Etude de la Radiophonie du Midi," Radio-Toulouse was built on a site four kilometres distant from Toulouse on the Balma plateau, sixty metres above the level of the plain between the Hers and the Garonne.

Its initial working power was 1.2 kw. This was later increased to 2 kw.; two further increases have taken place since, the first in 1926 to 5 kw., and the other in 1927 to 8 kw. (its present power).

To be able to compete favourably with the best of foreign stations, Radio-Toulouse has followed the radio-electric technique, and is always ready to adapt its gear by introducing all the latest inventions.

Its perfect modulation is appreciated by all French and European



listeners, and its range is so extensive that regular listeners are to be found in Varsovia, Lisbon, Tunis and London.

Radio-Toulouse has functioned since April, 1925, without a single day's interruption.

**New Station**

An offshoot of the original post is the new station of St. Agnan. This station, built by the French Electrical Radio Society and equipped with all the most modern devices, is just completed, and experimental broadcasts have been carried out since June 1st, 1932. It is the first station to be supplied

*How did they start, these stations which we now listen to almost every day? In this series a special correspondent tells you something of the history and the present arrangements of some of Europe's principal broadcasters, beginning with one of France's most popular stations—Radio Toulouse.*

groups, and listeners in general, and to mark their own appreciation of the useful work being done by Radio-Toulouse, have now given it their full permission to carry on on the lines it originally intended.

Whether you go to Germany, Austria, Poland, or Great Britain, you will find listeners who regularly tune in to Radio-Toulouse. The great part it is playing in national affairs is only equalled by its international activities.

It was Radio-Toulouse which was the first to broadcast, in 1926, religious services from St. Etienne Cathedral.

**Opera Relays**

It was Radio-Toulouse which, in 1926, transmitted operas from the Théâtre du Capitole, using for the purpose a transmitter which was installed in the middle of the theatre, because the Government refused to allow the use of telephone lines.

It was Radio-Toulouse again which was asked by the Reich Rundfunk to carry out the relay of the Graf Zeppelin's first flight across the Atlantic.

It was Radio-Toulouse that represented France on the occasion of the first international relay between Germany, France, and Spain.

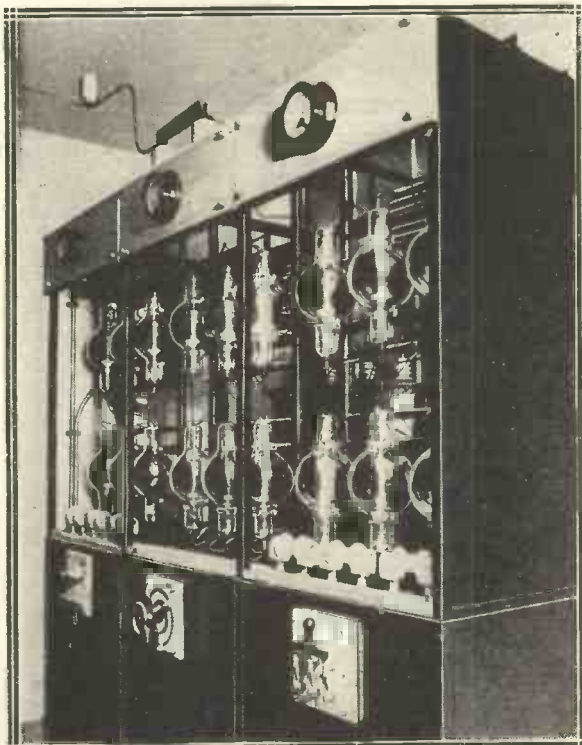
And, finally, it must be remembered that in January, 1932, the office for propaganda of the League of Nations selected Radio-Toulouse in preference to any other post to broadcast all the League's propaganda appertaining to the International Conference.

Since April 15th, 1925, Radio-Toulouse has broadcast more than 21,000 hours of programmes. All these broadcasts have been announced by the same announcer, Jean Roy.

**Popular Announcer**

Since April 15th, 1925, he hasn't had a single day's holiday; nor a day off from the studios at Toulouse. His popularity among listeners is enormous, and is only equalled by his simplicity and regularity.

**FRANCE'S INTERNATIONAL REPRESENTATIVE**



Three of the banks of power valves used by Radio Toulouse for its 8-kilowatt transmissions on 385 metres.

with the new 100-kw. valves: masts 120 metres high and 220 metres apart dominate the Enjaur plateau.

The experiments carried out up till now clearly show that the geographical situation of the new station is well nigh perfect.

The splendid radiation of the aerial enables the new station, with a power averaging 60 or 70 kw., to be heard perfectly anywhere in Europe and North Africa, and to rival any foreign station in strength and musical quality.

It is the intention of the new to carry on the tradition of the older station at Balma, and its programmes will endeavour to supply the threefold demand for "instruction, information, and entertainment."

**Past Difficulties**

Fourteen Radio Clubs, 184 Agricultural Syndicates, besides other bodies, work with Radio-Toulouse in the execution of its task.

The Chambers of Agriculture, of Commerce, and other professional groups, also collaborate actively in the life of the great Midi post.

It mustn't be supposed, however, that Radio-Toulouse has pursued a course free of all obstacles. Difficulties with the Government, for instance, have been numerous, particularly on the question of programmes. There was a time when the Government sent officers with instructions to stop the Midi posts transmissions altogether. On another occasion they cut the telephone lines in order to prevent a certain relay.

Then the Government raised a vigorous complaint about the broadcasting of religious services; and lastly, in February, 1928, it intimated to the station that it was to close down within a month.

The succession of Governments, however, since 1925, in response to the demands of certain regional

ANOTHER FREE GIFT  
IN  
NEXT MONTH'S  
"MODERN WIRELESS"



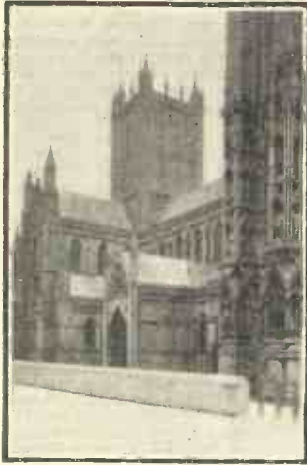
ON most of the occasions when I have tuned to 424.3 metres in search of Stalin, the Moscow giant, I have been rewarded by nothing more exciting than a severe heterodyne caused by the Moscow and Madrid stations, which employ the same wavelength. Recently I have, luckily, been more fortunate, hearing Moscow-Stalin at good strength on numerous occasions. On one occasion I received this station at greater strength than ever before, or after. Swinging the dial around, I suddenly came upon the "Red Flag" being broadcast upon Moscow's wavelength. This was followed by the station announcement and a gramophone recital.

**Indoor Aerial**

The power with which this station came in can be gauged by the fact that I received it upon the loudspeaker, using my 1-v-1 receiver and a wire slung around the room as an aerial.

Another station upon an adjacent wavelength to Moscow has been providing an excellent signal after being little heard. This is the North African station at Rabat. Unfortunately, interference between this station and Dublin frequently mars the reception of both stations.

It is sometimes quite difficult to catch Rabat's call (which is



# WHAT THE DISTANT STATIONS ARE DOING

Our Special Listener's log which gives you an idea of prevailing conditions in the transmitting world.

made in French) owing to the habit of the station to decrease its strength for announcements. Algiers also used to do this, but I rather fancy it has discontinued the practice, which is most annoying to distant listeners.

I think most readers will envy the New Zealanders their remarkable locality, for, as I remarked in a previous issue, European, as well as American, Japanese, Chinese, Indian, etc., stations are being received at good strength in that dominion.

**A Newcomer**

According to the latest reports from that country, I learn that Rome, Turin, Bucarest, Hilsberg, Bordeaux, Milan, Paris, Bero-nunster, Toulouse, Lwow, Leipzig, Strasbourg, Berlin, Bratislava, Brno and Muhlacker have provided excellent signals.

Whilst New Zealand enthusiasts have been receiving Europe, I, and I presume many other British enthusiasts, have been experiencing excellent reception from the United States of America and the Argentine Republic.

Although Latin-American stations have provided excellent signals upon numerous occasions (I logged twenty-one on one occasion), the most enjoyable reception has been provided by North American stations.

W B H S, Huntsville, is a newcomer which employs a power of 50 kw. upon 252 metres. This wavelength is also employed by W I C C, Bridgeport, Connecticut, a 500-watt station that operates during daylight only, and W O A I, San Antonio, Texas. Although W O A I employs the same power as W B H S (50 kw.) the latter station can frequently be heard clearly.

Readers will probably remember that during September I received W T A M, Cleveland, Ohio, and several unrecognised American stations, during daylight at the receiving end. A few weeks ago I got an even better record in daylight reception.

**Receiving America**

On this occasion I employed my three-valve receiver and commenced operations at 4.20 a.m. (G.M.T.). As soon as my valves warmed up, I heard dance music coming in at tremendous strength. Listening to this until 4.30 a.m., I was informed (by the announcer) that I was listening to W C A U, Philadelphia, Pa., and that I had just heard a programme of dance music played by Guy Lombard and his Royal Canadians. I turned the dials round and received K O B, State College, New Mexico, and K M O X, St. Louis, etc. At 5 a.m. I tuned-in W P G to hear the "Californian Melodies on Parade." After listening to this for a little time, I tuned-in a number of American stations, including W B T, Charlet, North Carolina; W R V A, Richmond, Va.; and W N A C, Boston.

On the following night I tuned-in thirty-two North American and numerous Latin-American stations. Those verified were W I O D, W P G, W C A U, W T I C, W G Y, W B B M, W D A E (Tampa, Florida), K T H S (Hot Springs, Arkansas), K R L D (Dallas, Texas), W O W O (Fort Wayne), W J R, W J Z, K Y W, K D K A, W C C O, W F A A, W A B C, and W E B C (Superior, Wis.).

**Surprising Stations**

W D A E, W I O D, and W E B C were the most surprising stations upon this occasion, for although



they only employ a power of one kilowatt each they all came in upon the loudspeaker at times. Of the three W I O D was the best received, with W D A E, Tampa, second.

W T I C, Hartford; W P G Atlantic City; W C A U, Philadelphia; W I O D, Miami; W D A E, Tampa, were the "stars," as regards volume.

Speaking of W T I C, Hartford, reminds me of the latest news from this station.

**Serious Defect**

About a year ago W T I C synchronised with W B A L, Baltimore, and both stations operated whole time instead of half time, as was necessary when both stations employed the same wavelength, and were not synchronised.

At the time of the commencement of experiments I was informed by the chief engineer of W T I C that the synchronisation was not "panning out" as well as expected. A bad "mush" area was formed and this alone was a serious defect.

After considerable experiments it has now been decided that the synchronisation of the two transmitters is not practical, and for this reason W T I C and W B A L are once again transmitting half time.

L. W. O.

SEVERAL new short-wave stations have appeared on the air during the last month, most of them not having been officially announced. It has been left to readers and myself to find them.

Baghdad transmits irregularly on 36.88 metres, and is worth looking for. Las Palmas, Canary Islands (call-sign E A R A), is working on about 47 metres, and fairly regular transmissions from Budapest seem to be occupying a little space in the region of 75 metres.

**New Calls**

G 5 S W is now sending "QSL" cards as verification of reports from overseas. So that the Britisher, who pays for the service, shall not be further taxed, a charge of 12 cents is made. Whether this is proving popular or not remains to be seen.

All the Columbian stations (H K A, H K B, etc.) have been "re-christened" with call-signs in the sequence H J-3 A B C, H J-3 A B D, etc. Ten or eleven different wavelengths are used, but none of them seems to be received very regularly over here as yet.

**Severe Interference**

A new station at Quito, Ecuador, is also working, with the call H C-2 J S B, on 37.5 metres; H C J B continues to work on 75 metres as hitherto.

H A T, about whom several readers complain, is a Hungarian

# SHORT-WAVE NEWS

A selection of very latest available information about broadcasting stations below 100 metres.

commercial station sending intermittent strings of dots on about 26 and 52 metres. He causes very severe interference with several short-wave broadcast stations at the times when his signals are strong locally.

**Operator's Troubles**

I was amused to read in a short-wave journal that the S.S. "Monarch of Bermuda" (V P S X) is "very discourteous over reception reports, which should not be sent." Personally, I think he (or she) deserves sympathy. It must be trying for a ship's operator to be forced to answer piles of unwanted reports from listeners all over the world who have really no business to be eavesdropping.

**Extremely Strong**

Those who are able to listen during the afternoon and early evening should not fail to keep a close watch on all the stations

below 25 metres. Reception on these shorter waves is somewhat variable, but when it is good it is really good.

As an example, W 3 X A I, (Bound Brook, N.J.) on 16.87 metres, is extremely strong on occasions; in fact, when he is audible at all he is nearly always an outstanding station.

W 2 X A D on 19.56, W S X K on 19.72, and sometimes Radio Coloniale on 19.03 are three other stations worth watching, while two of the really short-wave programmes come from W 8 X K on 13.92 metres and L S Y (Buenos Aires) on 14.47 metres.

**Interesting Addition**

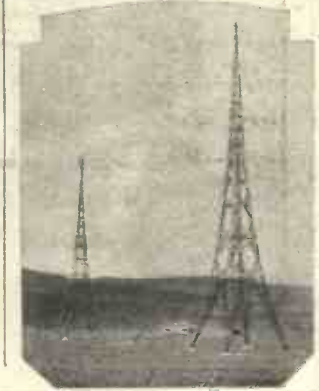
The American amateurs who use telephony in the 20-metre band seem to be putting out speech almost as strong as that from the broadcasting stations. Their low power only shows up when conditions are

bad; when transatlantic reception is good, one would imagine that they were using several kilowatts.

The broadcasting stations in the 31-metre group, on the other hand, are distinctly unreliable, and seldom as strong as those working lower down.

Zeesen is easily the best, with W 2 X A F usually second. P R B A (Rio), though outstanding a month ago, is much weaker at the time of writing.

Radio-Nations (Switzerland) will doubtless have got into his stride by the time these notes appear, and should be an interesting addition to the stations in this group.—W. L. S.





# TROUBLE TRACKING



**T**HE variable-mu battery valve has evidently come to stay, judging from the numerous questions I receive on the subject.

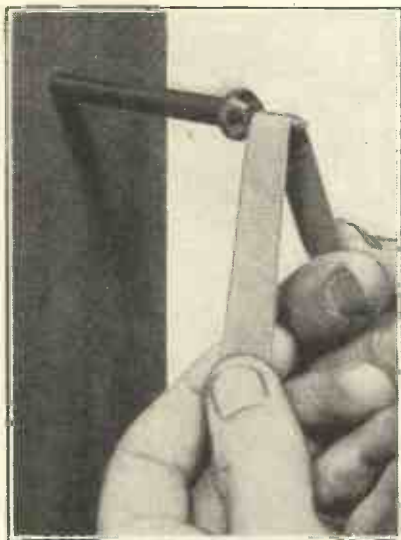
These queries are all the same: "How can I fit one of these valves to my present set?" Most of my correspondents seem to have short-circuited something in attempting the modification. There are difficulties. It is not just a question of pulling out the existing S.G. valve and putting a variable-mu in its place.

For instance, it is necessary to provide some means of varying the bias on the grid of the valve, and this is achieved by means of a potentiometer joined across the G.B. battery of the set, or alternately a new battery used solely for the variable-mu valve.

## Bad for the Battery

No special difficulty here, but where I find that the majority of constructors go astray is (1) in forgetting to arrange to switch the G.B. battery out of circuit when the set is not in use, and (2) joining the variable tapping of the potentiometer direct to the grid of the valve and "shorting" some part of the H.F. circuit.

## A JOB THAT PAYS



Dirty aerial joints are often responsible for loss of sensitivity in reception. The connection at the aerial lead-in insulator should always be kept clean, a strip of sandpaper being used for this purpose.

With regard to (1), it is evident that all the while the potentiometer winding remains connected across the biasing battery current is flowing through the resistance, and running the battery down.

## Standard Practice

A three-point switch in the H.T.—, L.T.— lead is one solution. This is standard practice in many receivers, the three-point switch switching off the L.T. by breaking the L.T.— lead and at the same time disconnecting H.T.— from L.T.—.

*Every month the Chief of the "M.W." Query Department discusses some of the common difficulties which can often be so troublesome. This time he deals with variable-mu's and heterodyne filters.*

By the simple expedient of joining the + side of the grid-bias battery to the H.T.— connection on the three-point switch "two birds can be killed with one stone."

Now how about the connection between the potentiometer tap and the grid of the valve? Well, in most conversions, i.e. when the set is not designed for a variable-mu valve in the first instance, I am strongly of the opinion that the safest scheme is to employ a fixed condenser and grid leak.

The condenser—a .001-mfd. is suitable, but the value is not critical—is inserted in series between the grid end of the tuning circuit and the valve grid. A 1-megohm leak is then connected between the grid and the slider or moving-arm terminal on the potentiometer.

By the way, the battery voltage required across the potentiometer is from 10–18 volts.

## Irritating Interference

Among my daily post I usually get one or two requests for information concerning the elimination of heterodyne whistles.

I know how irritating this type of interference can be, but unfortunately practically every heterodyne note is

slightly different in frequency, a fact that complicates the task of cutting out the nuisance and leaving the remaining musical frequencies unimpaired.

## Choke and Condenser

The obvious method that occurs to one is to join a tuned circuit across the output terminals of the set. This circuit can consist of a choke and condenser in series, one end of the choke being connected to one of the speaker terminals and the other end to one side of a variable condenser.

The remaining side of the condenser goes to the other speaker terminal.

The choke must be air-cored and should have a value of one henry.

The tuning condenser can have a value of .0005 mfd., and requires a slow-motion dial.

There are disadvantages in the scheme since the adjustments are critical and the condenser requires readjustment for each station suffering from interference.

Another method is to cut out certain of the higher musical frequencies, and with them the heterodyne whistles.

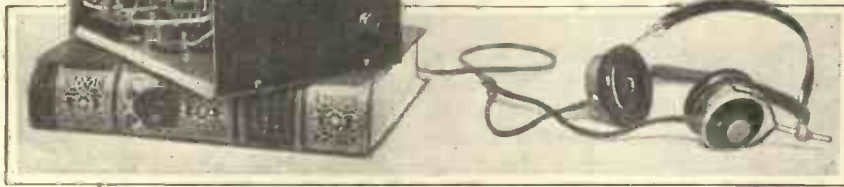
## The Whole Gamut

This scheme is not acceptable to everybody, especially to those who like to feel that, at any rate, *their* particular set is capable of doing justice to the whole gamut of musical notes.

But, still, there is no reason why a high note should not be used for distant reception, since quality is not of paramount importance in these cases, and it is better to receive a station less a proportion of its top notes than to get it plus a piercing whistle.

For local listening a switch arrangement could very easily be included for the purpose of disconnecting the filter.

# "WARMING UP" A SHORT-WAVE ONE



Multi-valve results with a one-valver.

By F. N. BASKERVILLE.

WHAT is the ideal receiver for really intensive bouts of DX listening on short waves? It is a totally different thing from the ordinary "set and forget" arrangement of the man who wants to be able to hear W 2 X A D occasionally, and isn't interested in trying to decipher weak Morse from Hawaii.

The short-wave broadcast set is designed primarily for stability and ease of operation. A really hot DX set may just possibly have both of these qualities. But, again, it may not.

### Ideal DX Set

In my opinion, the ideal DX set is a one-valver. This is "W. L. S.'s" gospel, and short-wave listeners can't do him too much credit for having the courage to broadcast so unorthodox a point of view. The one-valver will bring in all the DX signals that are strong enough to reach your aerial.

If you want volume, a single stage of transformer-coupled L.F. will give you all the noise you want. But give the "detector-only" idea a chance—switch out the amplifier now and then, and listen on the single. I wager that within a week or two you'll be ready to auction your L.F. components.

### Shortest Route

As regards the circuit, there is really only one. Call it Reinartz, Schnell, Hartley, anything you like. They all boil down to the same thing. Take the circuit diagram of any published short-waver (so long as it hasn't an H.F. stage) and start from that.

Now, then, the layout. It's pretty well known by now that every connection that goes to earth must be

taken there by the shortest possible route.

The ideal, of course, is an all-metal panel and base, with each earth connection rushed straight down to a soldered joint on the nearest point of the chassis.

### Avoiding Losses

The metal chassis, however—though it may be fine for broadcast wavelengths—has definite disadvantages when you get down to, say, 20 metres.

Roughly speaking, it absorbs H.F. energy that should be jealously conserved for producing signals in your headphones.

I know it's unfashionable to decry shielding, and canning—but figures

given in "QST" some years ago showing the losses that occur when a chunk of metal, earthed or un-earthed, is brought near a short-wave set, still stand.

The less metal about a short-waver, the better.

Even so, the rule about short and lavish earth wiring is well worth sticking to.

### Grid Wiring

More important than the earth wiring, in my opinion, is the grid wiring of the detector.

From experience I have found that every inch of wire cut out of the connections between the grid of the valve, grid condenser, coil, tuning condenser, and aerial series condenser, means a tangible improvement in performance.

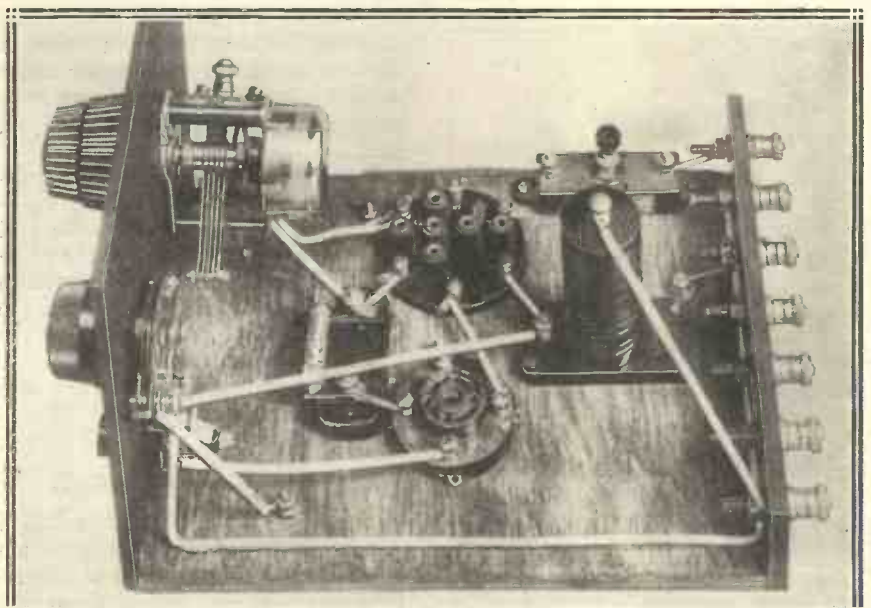
### Attention to Detail

I've got so keen on this that I now use a bracket valve holder for the detector, with the coil mount jammed up against it, and the aerial series condenser as near as it will go to that.

In fact, the actual connection between the grid terminal of the valve holder and the appropriate terminal on the coil holder is the grid condenser itself and two blobs of solder—nothing else.

As I said before, a one-valver is the set for real DX work. If, however, the best possible performance is to be extracted from the "Single," careful attention to detail always pays.

### FOR WORLD-WIDE RECEPTION



The main charm of short-wave reception lies in the simplicity of the apparatus. The whole world is at the beck and call of the owner of such a "hot-stuff" one-valver as the design by "W. L. S." shown above.



*Graham Farish says:-*

# GIVE THEM ALL RIGHT ROYAL RECEPTION THIS CHRISTMAS



So many friendly letters reach me from Wireless enthusiasts during the year that I feel this personal greeting goes to personal friends.

May you enjoy right royal reception this Christmas and may the New Year run to a brighter tune.

And that reminds me of a seasonable tip. A correspondent, delighted with the improvement made to his reception by fitting a FILT Chemical Earth, has hit on the idea of presenting one this Christmas to his Wireless friends.

A very sensible idea, too. You probably know from experience the wonderful difference FILT makes. What could be more acceptable to your friends.

Another practical gift is a "Gard" Lightning Arrester, that, for safety's sake, should be on every aerial. Storms will find your friend, more particularly his wife, grateful for the thought that gave such peace of mind.

## GRAHAM FARISH RADIO COMPONENTS

Obtainable from all Radio Dealers or post free from Sole Manufacturers. Graham Farish Ltd., Masons Hill, Bromley, Kent.

EXPORT DEPT: 11-12, FENCHURCH ST., LONDON, E.C.3.



### GRAHAM FARISH FILT

Percolative Earth

Bury the copper receptacle and the wonderful FILT chemical spreads through the earth, making a highly conductive area several feet deep. FILT keeps moist in any weather, earths your set perfectly and gives you every ounce of power, range and purity.

**2/6**  
EACH

### GRAHAM FARISH GARD

Lightning Arrester

Provides permanent and complete protection against lightning and makes it unnecessary to switch off during the worst of storms. The GARD is fixed between earth and aerial. It needs no attention. Its protection is permanent. Definitely does not affect reception.

**1/6**  
EACH



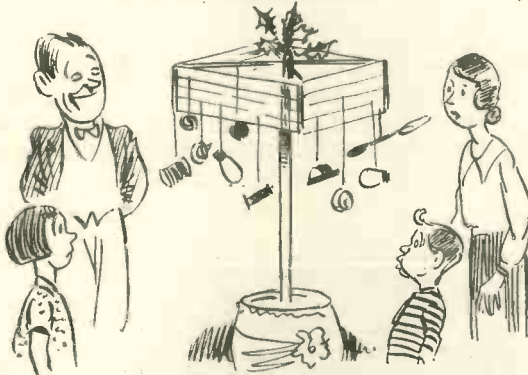
# THE NEED FOR ECONOMY



HAUNTED  
-WITH THE HORRIBLE THOUGHT THAT NEVILLE WILL SOON BE LETTING THE NEW YEAR IN - WE'VE GOT TO DO A BIT OF SCRAPING



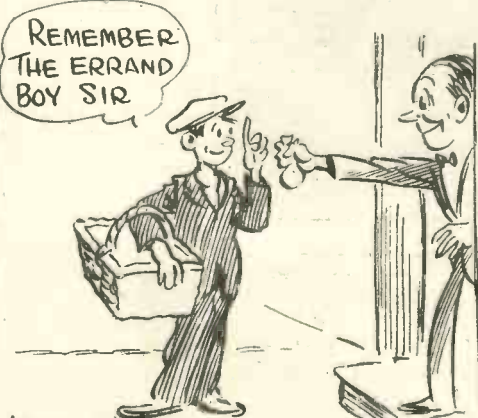
WE SIMPLY MUST RAISE THE WIND SOMEHOW - AND A BIT OF 'CAROLLING' WITH A PORTABLE MIGHT YIELD A FEW PUFFS.



THE OLD FRAME AERIAL AND A FEW SPARE WIRELESS GADGETS WILL SAVE THE EXPENSE OF A CHRISTMAS TREE



A FEW WASHERS IN THE PLUM PUDDING WILL CAUSE AS MUCH FUN AS THRE'PENNY BITS

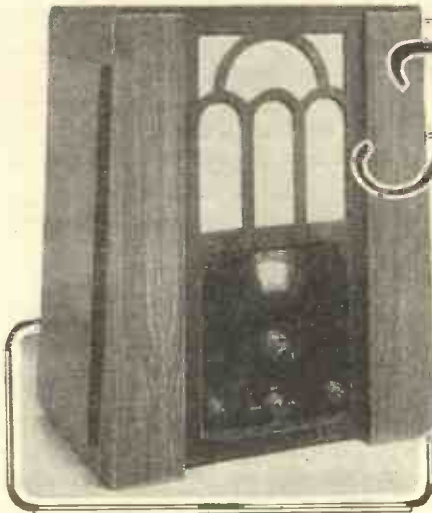


IF YOU MUST GIVE CHRISTMAS BOXES WHY NOT A SMALL BAG OF NUTS



BUT CLOSE THE DOOR BEFORE THE RECIPIENT FINDS THAT THEY ARE OF THE "B.A." VARIETY!





# The R.I. "MADRIGAL" THREE

An All-Electric Receiver for A.C. Mains

An enthusiastic account of how one of the finest S.G., Det. and L.F. sets on the market impressed a member of our staff during extended tests.

By an  
"M.W." TECHNICIAN.

"There are five-and-forty ways of building 'threes' these days, And every blessed one of 'em is right!"

THAT wasn't exactly how Kipling put it, nor was he referring to radio when he wrote those famous lines, but our topical variation of his popular theme just about sums up the present position of the commercial set market!

There are about five-and-forty ways in which commercial "threes" are built these days, and indeed one might even go further and say that to an extent it is true that "every blessed one of 'em is right."

### A Small Margin

But of that five-and-forty it is almost inevitable with radio, as with practically any other branch of science, that certain of them should climb to the top, either on the grounds of workmanship and general finish, or else on account of performance.

The margin between the best and the worst may be small, in fact almost without exception our tests of various commercial sets have shown that it is small; but occasionally in our tests we do come across a particular model that pushes the needles of our measuring instruments over just a little bit farther—a model which tends to make us linger a little longer over the aerial tests, a model on which our familiar friends overseas seem to come over a little more intimately, a model which perhaps impresses us on the score of appearance.

### What We Expected

Impartiality is the keynote of our tests. And when such a model as this does come along we are only too glad to be able to draw attention to the fact. May we, then, say right at

the outset of this particular review that such a model has just come along, and the instrument in question is the 1932 R.I. "Madrigal" receiver.

Frankly, we make no attempt to disguise the fact that we expected it of R.I. They have been concerned with progressive electrical engineering almost since the beginning of this century, and their radio experiences date back to the early days of broadcasting.

### Pleasant Anticipations

Throughout that period, year by year, R.I.'s have gone from strength to strength, and almost every year

pleasant anticipations as were present on the most recent occasion.

From our point of view, then, it is gratifying to be able to record that again this year the R.I. march of progress goes on.

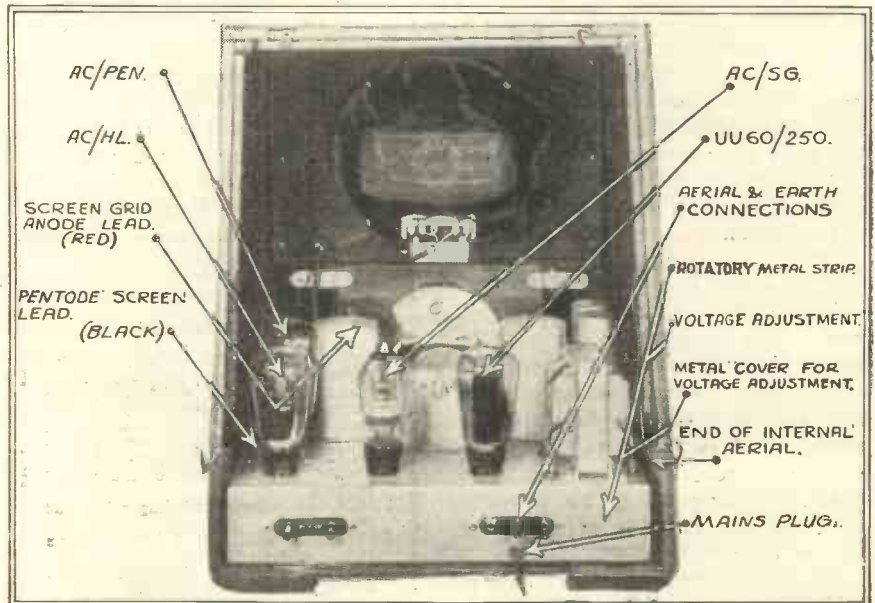
This year's model of the R.I. "Madrigal" is based upon the well-tried circuit arrangement of one S.G., det., and L.F., but that not an atom of efficiency has been sacrificed in any one of the three stages was quite evident from our practical tests.

### Very High Standard

The cabinet work is of a very high standard, and in our opinion it constitutes a housing worthy in every way of its interior. It is carried out in figured walnut, and the polish and general finish are excellent.

The control panel at the front is surmounted by an attractive fret, behind which is located a moving-coil loudspeaker which, from the

### HIGH-CLASS DESIGN FROM INPUT TO OUTPUT



Pointing out some of the features of this popular and efficient receiver. A special internal aerial is provided for those in flats and similar positions who are unable to erect a normal type of aerial.

about this time we have subjected a model of their newest receiver to our impartial test with the same

point of view of quality, leaves nothing to be desired.

(Continued on page 592.)

## HOW TO GET A GOOD EARTH

A few tips on the things that count and the way to carry them out in practice.

To use a poor earth is to invite trouble in the form of instability, loss of volume, and distortion.

An essential feature of a good earth is low resistance, but what is the use of employing a substantial earth lead if the most vital point of all, viz., the actual contact with the soil, has a high ohmic resistance?

Water pipes, buried plates and earthing tubes can with proper attention be efficient, but in many cases their effectiveness is a doubtful quantity.

Modern scientific research shows that a highly efficient earth can readily be obtained simply by burying a chemically-charged copper receptacle.

This type of earth, as characterised by "Filt," contains a chemical which at once permeates the sur-

rounding soil, and owing to its strongly hygroscopic powers ensures a low-resistance path for the currents flowing in the earth circuit.

With an earth such as this the periodical watering, which is necessary with a buried plate or earth tube, is no longer required.

The reproduction is really very beautiful, and the set gives all that has been claimed for it.

Again thanking you for your very kind assistance, which is so helpful to us readers of your valuable journal.

Yours faithfully,

ALFRED C. BAKER.

Reading.

## The "Five-Grid" Four

Sir,—I am writing this letter to congratulate you for turning out such a good set as the "Five-Grid" Four, which you published in the August number of "M.W." I live, as you will see, right in the swamp area of the London stations, but with this truly wonderful set there is no interference. As I am writing the set is receiving a station which is very close to the Midland Regional, but I am getting no interference, due to the novel aerial volume control.

Yours truly,

L. DAVIS.

Golder's Green, N.W.11.

## SUCCESSFUL SETS

Readers tell of their results with "M.W." designs for home-construction.

### More "Diodion" Delight

Sir,—I am very grateful to you for the very prompt and explicit way in which you replied to my query re "Diodion" set, by the aid of which I was enabled to overcome the difficulty and get going in a very short space of time.

Moreover, I am very pleased to say that the set is in every way a success—the many stations, both on long and short waves, rolling in with great ease of control and clarity.

## THE R.I. "MADRIGAL" THREE

—continued from page 591

The controls themselves, which are all conveniently located at the front, have been kept down to the lowest minimum possible for the achievement of satisfactory results.

The main tuning control is located centrally and immediately below the condenser scale, which is calibrated for both wavebands in wavelengths. A small concentrically-mounted trimmer control knob is also provided in this position.

### Range Adjuster

The knob which controls reaction, and which is appropriately referred to as the range adjuster, is the one to the right of the main tuning control, and balancing this on the left is a useful selectivity control which, incidentally, comes into service as a pre-S.G. volume control on powerful local stations (and on some of the distant ones, too!).

The only other knob, to which it is hardly correct to refer as a control in the operating sense, is a four-way switch giving medium waves, long waves, "gramophone" and an "off" position, all of which are clearly marked. This is located immediately below the main tuning control.

The back of the chassis carries sockets for the connection of an external pick-up, and in addition to the usual aerial and earth provisions there is a useful internal aerial scheme which will be of particular interest to flat-dwellers and others similarly placed, since it enables the set to be used "as it stands," that is, without any form of external aerial or earth connection.

Tests made under conditions such as these are calculated to show up any weaknesses that exist in a design. Mains hum usually tends to become accentuated, and the degree of sensitivity is easily calculable.

#### TECHNICAL SPECIFICATION

GENERAL DESCRIPTION.—A.C. mains all-electric receiver incorporating moving-coil loudspeaker.

POWER CONSUMPTION.—Approximately 50 watts.

NUMBER OF VALVES.—Three.

CIRCUIT.—S.G. Detector and Pentode.

ARRANGEMENT OF CONTROLS.—One for tuning (with concentric trimmer control), one for volume (left-hand knob), one for range (which is the reaction control) and one for waveband and "gramophone" switching, with central "off" position.

PRICE.—17 guineas, including valves and royalties.

DEFERRED TERMS.—£2 10s. 0d. down and 12 monthly payments of £1 8s. 9d.

MAKERS.—R.I., Ltd., Madrigal Works, Purley Way, Croydon, Surrey.

for unless the set is sensitive it will certainly fail to give a good account of itself under such stringent conditions.

But not so the 1932 R.I. "Madrigal."

Our series of practical tests started off with this particular adaptation, and whereas one must necessarily expect a limit to the number of stations that can be received under these conditions, the performance of the "Madrigal" was good, very good, and the hum level was sufficiently low to be considered as almost negligible, which is proof of the adequacy of the smoothing arrangements employed in the design.

### Dozens of Distant Stations

But for those who are able to use an external aerial, whether outdoor or otherwise, there is practically no limit to the number of stations that can be received. With an average size aerial selectivity is good (and in any case it is variable to suit each particular requirement in this respect); and our tests under these conditions proved that it was possible to receive literally dozens of distant stations at satisfying loudspeaker volume. In this connection it is worthy of note that we do not take into consideration stations that are badly heterodyned or are otherwise unfit for consideration as honest-to-goodness alternatives.

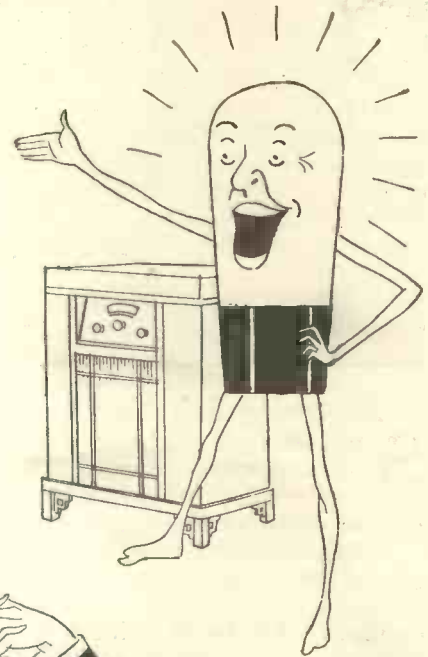
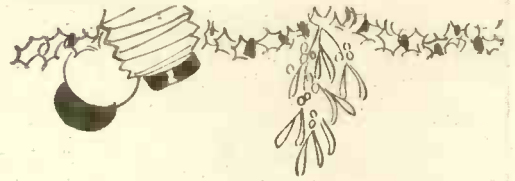
We congratulate R.I. upon the production of a first-class instrument, and we have no hesitation in saying that in our opinion the 1932 R.I. "Madrigal" is a set of which anyone could justly be proud.



# Osram Valves

MADE IN ENGLAND

WITH THE  
**WEMBLEY FILAMENT**



WILL FARROW

For correct types ask your wireless dealer. Also write for the OSRAM WIRELESS Guide (1932 Edition).



# The Christmas tonic to any Set!

SOLD BY ALL WIRELESS DEALERS

PRESCRIBE OSRAMS for your own & your friends' sets this CHRISTMAS.

Advt. of The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.

By the  
Technical  
Editor

# On the



The sockets are in the form of coiled springs, which automatically adjust themselves to the various sizes of valve legs. There is a one-piece bakelite moulding, and the springs are protected underneath by a tough transparent covering.

### New Tunewell Lines

The advantages of a logarithmic grading of resistance in a volume control are very real, though they do not yet seem to be fully appreciated. However, it is heartening to note that it is now being increasingly adopted.

A quite new component using it is the Tunewell Wire-wound Volume Control, which is able to handle up to 3 watts.

The moving contact smoothly rides over a series of small studs, so that there is efficient contact and a freedom from wear. This Tunewell volume control is a first-class piece of work.

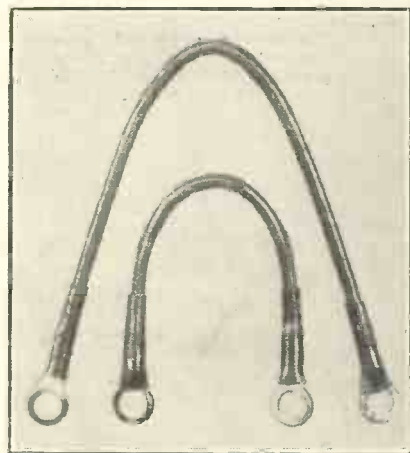
### Improving Selectivity

**S**OME form or other of series condenser arrangement figures in the aerial circuits of a large number of sets these days.

A popular method is to have two fixed condensers joined to two aerial terminals. The aerial is taken to one or other of these terminals in accordance with the degree of selectivity (and volume) desired.

Messrs. Lissen have recently introduced a novel form of condenser for

### LISSEN FLEXIBLE CONDENSERS



Their values are .0006 mfd. and .0001 mfd., the longer one having the smaller capacity.

this specific purpose, although, of course, it has other uses as well.

It takes the form of a "Spaghetti," as can be seen from the accompanying photograph. Thus it is most convenient for quick and easy insertion in an existing set.

Its construction comprises an insulated conductor forming the one

element, over which a spiral of wire is wound. The whole is enclosed in a tough insulating jacketing.

We have tested our samples both for rating and efficiency, and find them to be fully up to the normal Lissen high standard.

### Benjamin Products

We have now had the opportunity of testing a Benjamin "Transfeeda." As will doubtless be well known, this is a Resistance-Fed Transformer Unit.

A 1-3 ratio high-inductance low-frequency transformer, a wire-wound anode resistance, and a coupling condenser are all built into the one neat and compact case.

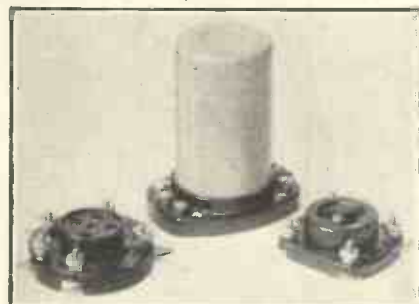
The resistance is of 50,000 ohms, and there is a tapping at 30,000 ohms, so that either a low- or high-impedance valve can be suited.

It is interesting to note that the component parts of the "Transfeeda" are individually perfect as such, and are not rough pieces of work buried in the all-enclosing metal case.

By the way, this last provides complete shielding. The "Transfeeda" gives a substantially straight curve over the whole of the working frequency spectrum.

The Benjamin Five-Pin Valve-holder is a strong, well-made component, as well it might be, for Benjamin are noted for their valve holders. In fact, they are the pioneers of the anti-microphonic principle.

### FAMOUS COMPONENTS

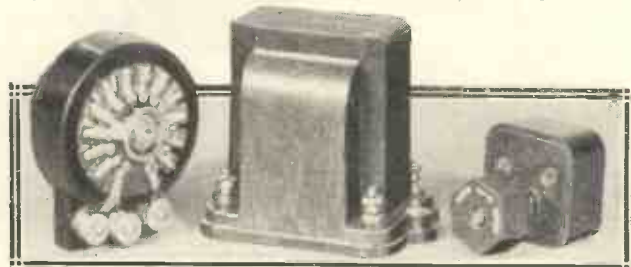


The Benjamin "Transfeeda" and two "Vibrolders."

The same remark applies to the Tunewell Radio-Gram Switch, which has a fine action, definite and effective. It is contained in a polished case of high-grade ebonite.

Finally, we must make at least brief reference to the Tunewell

### THESE ARE WELL MADE



The Tunewell volume control, L.F. transformer, and radio-gram switch.



# Test Bench

*Lissen, Benjamin, Tunewell, Goltone, Utility, and Telsen products are among the interesting new components discussed this month.*

1-3-5 L.F. Transformer. This, too, is a well-made component and, bearing its price in mind (7s. 6d.), it can be said that its performance is equally good.

## USED IN THE "PROGRAMME PRINCE"



The coil that was chosen for "M.W.'s" blue-print set.

### Goltone Screened Coil

The fact that we have used Goltone Screened Coils in our blue-print set is proof that we consider them to be satisfactory components.

It is a startling fact that there are not very many makes of which this could be said. It is startling because of all radio components the demand for "canned coils" must surely be nearly the greatest.

And yet, so far, we have found only a mere handful of makes which are efficient against an over-duplication of good brands of some other components.

"Goltone" screened coils are available in various types, suitable for all ordinary purposes. The most popular one is probably the Dual Range R9/G.G.R., which embodies a reaction winding and medium- and long-wave windings.

All types sell at the reasonable price of 5s. 9d. each.

### Good Ganged Condenser

The "Utility" Ganged Condenser (Messrs. Wilkins & Wright), which we

illustrate this month, should prove of special interest to constructors in view of the many practical features of value it embodies in its construction.

It can be mounted with the trimmers at either the side or the top, and the spindle projects at both ends.

Then, again, there are additional fixed plate lugs to facilitate wiring.

The component is built up with rock-like rigidity.

The steel chassis is solidly riveted, and the vanes are tightly locked together.

Accurate matching between the sections is guaranteed as a permanency by the makers.

The slow-motion movement is excellent and the scale open and clearly marked.

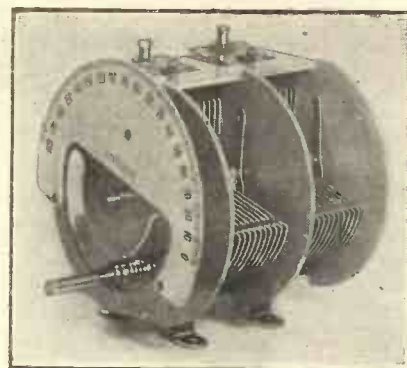
Altogether this "Utility" ganged condenser does full credit to its famous makers.

### Refined Radio

The usefulness of an efficient tone-control does not end at the compensation for the inherent failings of certain links in the reception chain and the juggling about with tone to suit individual ears.

It can also be employed, in conjunction with closely adjusted reaction, to make distant reception comparable with that of the local in point of quality, despite the side-band clipping consequent upon the necessarily keener selectivity.

All the foregoing can be done, and

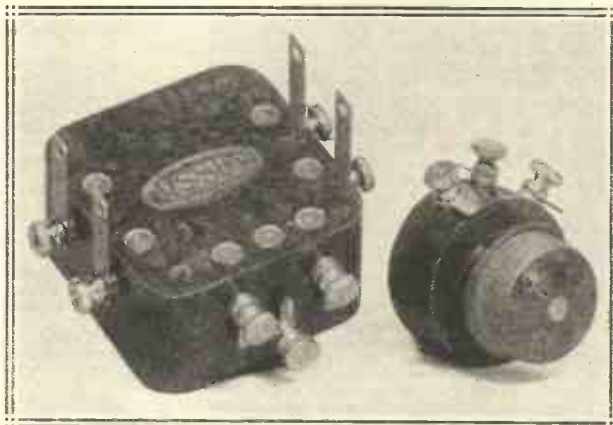


The "Utility" ganged condenser. (Messrs. Wilkins and Wright.)

done very well, with the Lissen Tone Compensator. In addition, this includes an optional filter for cutting out heterodyne whistles and scratch in gramophone record reproduction.

The device fits beneath a Lissen Hypermite transformer, and the tone controlling is, of course, accomplished with a potentiometer.

## THE LISSEN TONE COMPENSATOR

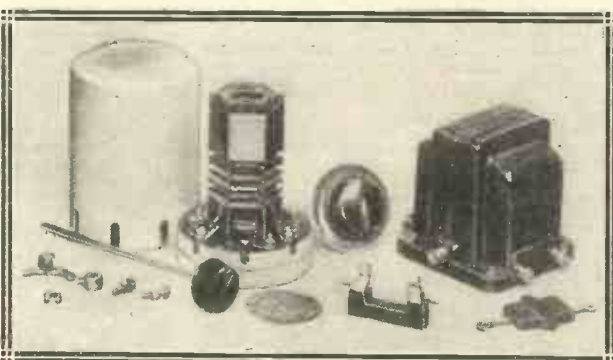


This useful device is designed to operate in conjunction with the Lissen Hypernik L.F. transformer.

Either bass or treble can be emphasised, or a "straight line" response achieved. Our tests showed

(Continued on page 620.)

## THREE FROM THE TELSEN RANGE



The Telsen screened coil, fuse-holder, L.F. coupling unit, and tag condenser.





# RECENT RECORD RELEASES

## BROADCAST

ONCE again the Christmas festival is approaching, and the various gramophone companies are busily engaged in turning out discs that have the festal atmosphere. This does not mean that they necessarily include carols and Christmas hymns, nor that the inevitable ghost story has to be included, though a number of the records available this month include those ingredients.

The Crystallite Record Company has turned out a wide variety of discs this month, though the special Christmas records are of the "straight" type, including carols and Santa Clays. Not that this fact makes them any the less enjoyable, for the atmosphere is strongly attained.

Sandy Powell heads an interesting list as Santa Claus, taking the part of that mythical but venerated old fellow with all the characteristics of which the humorist is capable. The other side of the record includes The Carol Singers. It is one worth hearing. (761.)

Next on my list is Christmas Eve in Paradise Alley, a further "kid" disc that will meet with ready sale. It is an excellent "local" record. (906.) There is one more of these small Broadcast records of the festival type, and that is A Christmas Eve Carol Party, by the Yuletide Singers. It is spoiled, in my opinion, by being unnatural. Not many groups of guests in a Christmas house party would burst into a series of carols on hearing the waits outside, and the way this particular burst into song is carried out makes the whole thing rather artificial and stilted. It is a pity.

Perhaps it will be best if I finish the seasonable recordings before going on to the ordinary items, so I will just mention the larger Broadcasts of the Christmas type now.

These are definitely of the straight order, and include the Choir of St. Mary-le-Bow in a number of Christmas hymns and carols with organ accompaniment. They are all good and should be included in the list of all who are on the look out for seasonal records. In addition, there is a Christmas Service from the same church, conducted by the Rector.

Going back to the smaller Broadcasts, I would like to draw your attention to Jolly Old Uncle Joe and Mrs. McGrath and Mrs. O'Rafferty, good fun of the Irish type, on 908; and to Mellow and Rich, singing Cheery Fireside Memories (012), which is a jolly medley of favourites of a bygone day.

Laurel and Hardy's particularly weak (from the record entertainment point of view) theme tune, The Dance of the Cuckoos, is recorded again, this time by the Rhythm Rascals on 916, with Speedway Sam on the other side. I am not struck with this, but as it probably appeals to quite a number of people you should give it a chance and hear it for yourself.

Now for some of the larger discs, which cost the mere sum of one and sixpence. The all-star non-stop Variety show on 3252 hangs far rather badly; and though the artistes undoubtedly do their best, the impression given is one of indispensable artificiality. It is too serappy, and one can hardly expect otherwise when the time limit is so small.

Billy Caryl and Hilda Mundy give us another of their Domestic Bliss recordings. They are as funny as ever (3253.)

"England's greatest tenor" sings Masquerade on 3251. His voice and method of singing are fairly suited to this type of number, but I am sorry that the disc was badly recorded, it ruins the whole thing; it is horribly thin in the orchestral part, and never is the recording clean.

Singin' Sam seems to be holding his own pretty well, and his latest, Round the Bend of the Road and For Old Time's Sake, are good electrically and vocally. (3258.)

Not so is the recording of that haunting melody, The Night When Love was Born, by Chick Bullock. This is his first Broadcast record, and if I do not

hear his next I shall not mind. It is the case of another good number spoiled. (3259.) The other side is not so bad, but Chick's voice is either too heavy or too heavily modulated for crooning songs, and these numbers necessarily call for that sort of treatment.

Of the dance numbers I would draw your attention to Moon and Let's Put Out the Light (3260), and to You're My Everything, with Moonlight, the Danube and You (3261). Both are played excellently by The Blue Mountaineers.

## COLUMBIA

Columbia are going all out in the pushing of one particular record this month, and rightly so, for it is a very good piece of work. The disc in question was brought out in time for the November 11th celebrations, and is a recording by Debroy Somers' Band, with Norman Allin as vocalist, Ion Swinley as narrator, and chorus. The record depicts the history of The Old Brigade in the form of a ballad with effects by the band.

It is a double-sided twelve-inch disc, and on the one side we are taken through the struggles of the old brigade in such historic fights as Waterloo, the Crimea campaign, and so on to the Boer War. The theme song throughout is the well-known ballad, "The Boys of The Old Brigade," and interspersed with Allin's singing of this are illustrative interludes by the band.

The second side takes us through the last war, from the start to the final scene of the homecoming of the Unknown Warrior to the "Heart of the Nation," Westminster Abbey. The record is impressive, and well worth getting. (DX379.)

*A brief selection from some of the records released during the month. Only a few are discussed, but they are representative of the many brought out by the various gramophone record companies.*

In lighter vein is DX371, which contains Daly's Theatre-Waltz Memories, parts 3 and 4. Played by Charles Prentice and his Orchestra, with Ina Souez as vocalist, it forms a delightful reminder of the most popular items during the last twenty years or so of Daly's history.

Another Choral record is that made by the B.B.C. Choir on DB934, whereon is Jerusalem the Golden and Our Blest Redeemer, with organ accompaniment. They are excellent discs, but naturally lack the fullness and grandeur of the National Chorus to which I referred last month.

Heddle Nash always makes a good record, and his latest is no exception to the rule. I thoroughly enjoyed his two songs from "Rigoletto" on DB932. They are the two popular pieces, La Donne e Mobile and Questa o Quella, and both are delightful. Let us have more of him.

Of a totally different type is DB938, which contains two numbers by that popular entertainer, Norman Long. He has chosen a couple of his broadcast favourites, I Certainly Don't Need You and She Was Only Somebody's Daughter. The former is a clever skit on the usual type of crooner, and takes off the average dance lyric, while the second of his pair is a collection of the present-day couplet puns. They are good, but not particularly suited to recording.

The Forty Stars, a male chorus, are to be heard

in Watchman! What of the Night, which is well done, though the recording is a little harsh in parts. On the reverse side is The Moon Hath Raised Her Lamp Above. This is not so interesting an item as the former, but it is well sung nevertheless.

The B.B.C. Dance Orchestra has recorded a couple of discs that will be welcome to many. One of these is the broadcasting favourite, I Beg Your Pardon, Mademoiselle, on the other side of which is Let's All Dance the Polka. This is on CB505, while an earlier record worth hearing is CB496, on which we have a couple of waltzes, Hazel Eyes and Same Old Moon. Both these discs are excellently recorded and played.

The Savoy Hotel Orpheans are to be heard on CB504 playing My Silent Love and I Wanna Be Loved. A couple of foxtrots that are not particularly inspiring in their composition, though the playing is of a high order.

## H.M.V.

The big work in this list this month is undoubtedly the Elgar violin concerto recording. Sir Edward Elgar is Britain's leading composer, and in this series of twelve-inch discs we have a fine record of both his work and his conducting, for the composer has conducted the whole of the concerto. The soloist is the youthful Yehudi Menuhin, who, incidentally, must be something like a fifth of the age of the man whose work he is playing and who is conducting, an unusual situation to say the least.

The result is a truly magnificent series, and all music-lovers will do well to get copies if they can. The numbers range from DB1751 to 1756 inclusive. Don't forget to hear some of them, they are well worth it.

Popular classical music (whatever that is) has a fine example among the December H.M.V.'s in the Otello Suite, played by the New Symphony Orchestra under the baton of Dr. Malcolm Sargent. This piece of music is a great favourite among bands at popular concerts, and the records (there are two discs) should meet with a good reception from a large number of gramophone owners. (B4273-4.)

One of the finest band recordings I have heard is that that was taken at the Crystal Palace National Band Festival a short time ago. It was made without the massed bands concerned knowing anything about it, so they were not put off their stroke in any way through fear of "Mr. Mike," and the result is wonderful in its realism.

The items chosen are beloved of brass bands, especially at festival time, and they are thrillingly played. So we have a fine recording of the Hallelujah Chorus and the world's most famous hymn, Abide With Me. These are the first records ever made of the well-known annual festival. (C2470-1.)

The plum of the month in the vocal records is B4267, whereon Peter Dawson, that veteran of the recording trumpet and microphone, together with a chorus, sings El Abanico and Sons of the Brave. They are new arrangements of two popular war-time marches and will rank among the very best that Peter Dawson has made. In addition he has also recorded on B4278 two songs of London: London Girl and Sing a Song of London.

Noel Coward, probably the most brilliant playwright-composer of modern times, has been persuaded to record items from his latest success, Words and Music. Four of these are to be found on B4269-70, including "Mad Dogs and Englishmen," with its unsurpassed satire and irony.

We have heard enough now of Underneath the Arches (I think that it runs a grave risk of being done to death), but all the same I must say I appreciated Gracie Fields' rendering of Flannagan and Allen's famous "theme song." She is a wonderful artiste! On the other side is a delightful little song-sketch entitled John Willie's Farm. This is an item that is really different. You should get it.

Melville Gideon has made a record of what I consider the most tuneless dance number we have had for a long time, and that is saying something. Ray Noble has also made a record of it, and as he composed it for Jack Payne's film "Say it with Music," his is probably the best rendering of it we are likely to get. And we shall no doubt hear it again and again. The number is Love is the Sweetest Thing, and though Gideon's interpretation is very fine, I prefer the dance band and vocal refrain rendering supplied by Ray Noble. It will be remembered that this young composer and dance-band leader was the originator of "Good-night, Sweetheart" that was all the rage this last summer, and of "By the Fireside," which also was a best-seller. In this number (on B6245) he excels himself in tunelessness.

Do you like really hot dance rhythm? If so you should hear Duke Ellington and the Mound City Blueblowers on B6252. The former are exercising themselves with Creole Love Song, and the latter are concerned with Tailspin Blues. You may or may not like them; it will be no half-and-half affair, I trust.

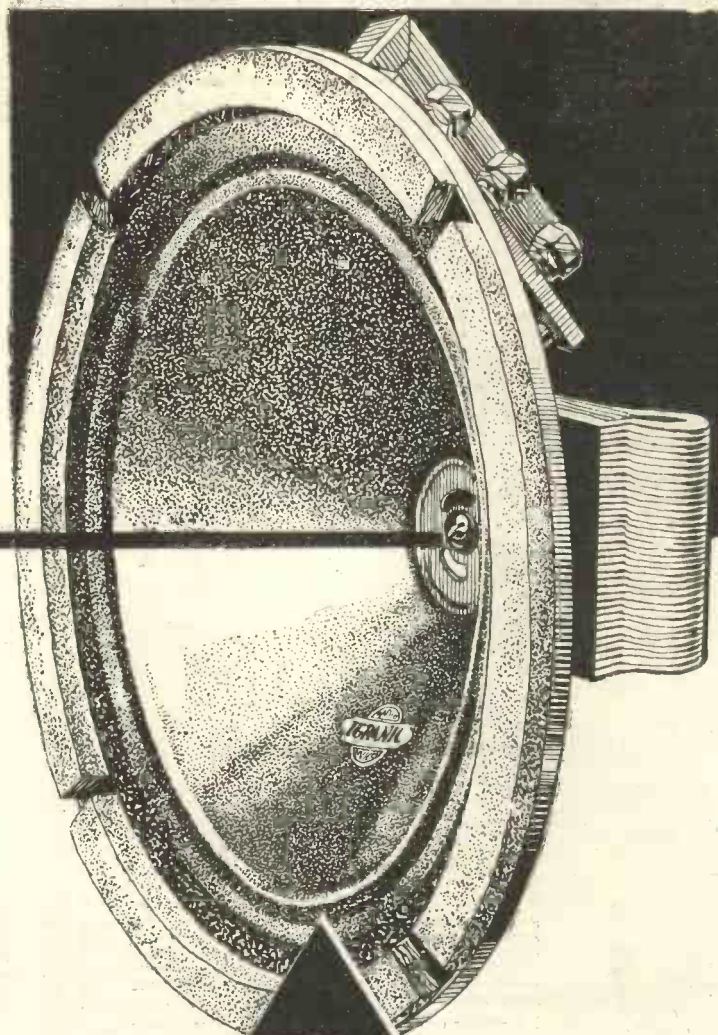
Probably the best of the American dance numbers this month is the record containing Willie We Danced at the Mardi Gras, and played by George Olsen and his Music on B6246.

(Continued on page 625)



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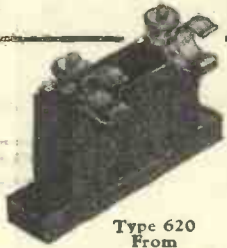
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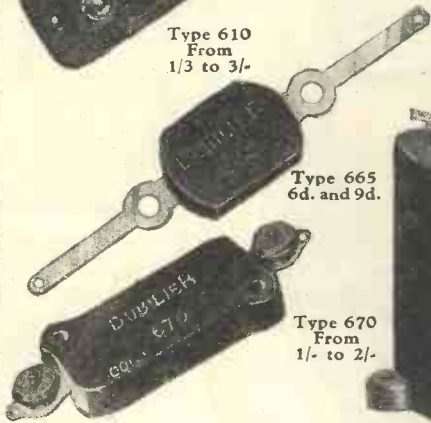
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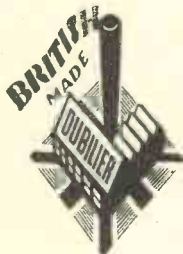


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# QUESTIONS ANSWERED

## Converting to A.C.

C. C. (Chichester).—“My present set is an S.G., det., and one transformer-coupled stage of L.F., designed for 2-volt battery valves. It works very well indeed, but I feel that I would like to do away with batteries altogether and connect the receiver up to the mains. If I purchase three indirectly-heated A.C. valves, do you think that the set will work satisfactorily without any other alterations?”

If you could obtain three mains valves having precisely the same characteristics as your present battery valves the set would continue to function without any necessity for modifications, but the snag is that mains valves are more efficient than the other type, and unless your receiver is well screened and adequately decoupled you may strike a heap of trouble on the H.F. side.

If, however, your coils are of the “canned” variety and your layout is good, by all means go ahead. You will have to take care to see that the various leads are properly spaced and that there is no possibility of capacity “feed back.” Decouple the screening grid and the detector stage. Also run your heater leads in earthed metal-covered casing.

## Decoupling Values

M. C. L. (Rushden).—“I frequently read about the decoupling of amplifying stages, but I have never been quite clear about the principles underlying this method of preventing instability. How do the resistance and by-pass condenser combine together to keep the set in a stable condition?”

To deal with this question fully several pages of MODERN WIRELESS would be required. Briefly, in a circuit without decoupling the low-

frequency impulses in the anode circuit flow through the common circuit formed by the H.T. battery or mains unit.

This portion of the circuit can be considered as a resistance common to the anodes of all the valves. Voltages are developed across this resistance, which in turn produce oscillations at a frequency depending upon the circuit constants.

value for a decoupling resistance in the detector stage and 2 mfd. is about the minimum size for the by-pass condenser, which incidentally has an impedance of about 1,600 ohms at 50 cycles. Four mfd. are better than 2 mfd., and in this case the impedance at 50 cycles will be 800 ohms.

In practice, price is a consideration, and in consequence designers do not use 4-mfd. condensers if they find that 2 mfd. provide adequate stability in conjunction with the particular resistance value they have chosen.

Frequently the decoupling resistance has to have a fairly low value, otherwise the H.T. voltage at the anode of the valve will be cut down too much.

## Band-Pass Tuning

R. C. (Guildford).—“I have just built a simple band-pass receiver, consisting of a detector and 2 L.F. stages, with the idea of achieving high selectivity without a noticeable loss of high notes. On tuning in the various transmissions I find that there are two definite points of maximum volume.

“The tuning condenser is a two-gang unit, each section having a capacity of .0005 mfd. Can you tell me why this double-tuning effect occurs?”

Usually the effect you mention, R. C., is due to mis-matching of the two sections of the “gang” condenser unit—assuming the band-pass coil to be properly designed. Examine your tuning condenser and note whether any of the vanes appear to be bent, as they might be if the condenser has had a knock at some time or other.

Perhaps the condenser is provided with “trimmers.” If so, try adjusting them. You may be able to balance up the two halves of the “gang” in this way.

## TECHNICAL QUERIES DEPARTMENT

### Are You in Trouble With Your Set?

The MODERN WIRELESS Technical Queries Department is in a position to give an unrivalled service. The aim of the department is to furnish really helpful advice in connection with any radio problem, theoretical or practical.

Full details, including the revised scale of charges, can be obtained direct from the Technical Queries Department, MODERN WIRELESS, Fleetway House, Farringdon Street, London, E.C.4.

A postcard will do. On receipt of this all the necessary literature will be sent to you, free and post free, immediately. This application will place you under no obligation whatever. Every reader of MODERN WIRELESS should have these details by him. An application form is included which will enable you to ask your questions so that we can deal with them expeditiously and with the minimum of delay. Having this form you will know exactly what information we require so have before us in order to solve your problem.

London Readers, Please Note: Inquiries should not be made in person at Fleetway House or Tallis House.

To decouple a valve you have to insert a resistance in series with the anode and join a large condenser between the anode side of the resistance and earth.

The object of this is to keep the L.F. impulses out of the common H.T. circuit, a desirable state of affairs which holds good so long as the value of the resistance is high compared with the impedance of the by-pass condenser at the lowest frequency the amplifier can deal with; 15,000-20,000 ohms is a satisfactory

# RECORD SPEED



*There is only one correct speed at which a gramophone record should be played—and that is the speed at which it was recorded. Makers of gramophone records go to endless trouble to ensure that the recording speed is kept constant, and in this article JOHN MARSDEN tells you how you may ensure that your turntable makes the correct number of revolutions a minute.*

**W**E have probably all seen at one time or another one of the men who trundle a gramophone round the streets, and hopes to—and usually does—receive a shower of coppers in return for his mechanical entertainment. It is a peculiar fact that invariably the reproduction is very high pitched and tinny, and also the gramophone is a large exterior horn model.

### A Well-Known Fact

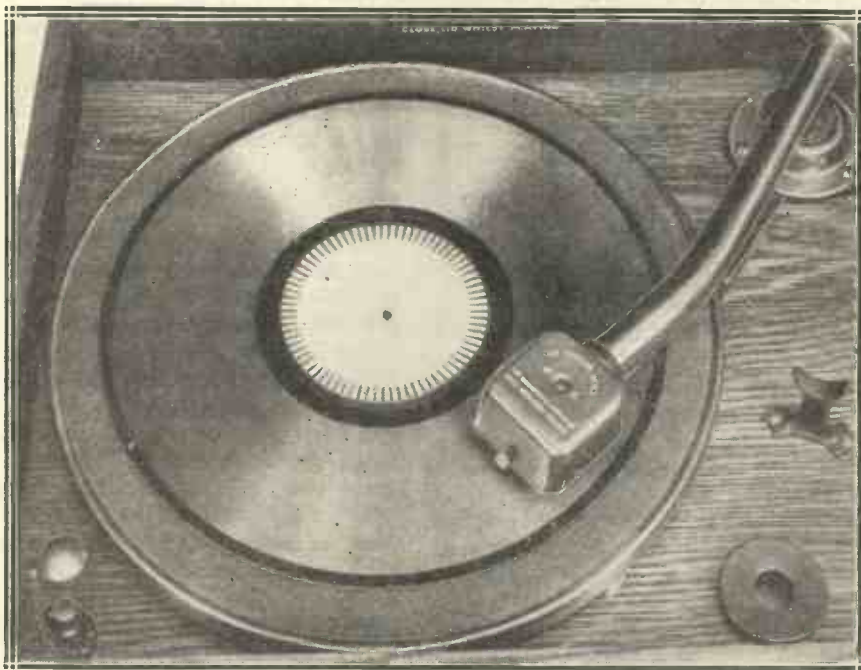
Now, providing the sound-box is in a fairly good condition, the reproduction from a machine with a large external horn should be quite good.

It is a well-known fact that during the years 1912 to 1924, when manufacturers tried to improve the appearance of the gramophone by reducing the size of the horn and tucking it away inside the cabinet, the standard of reproduction was inferior to the earlier external horn models.

### Very Common Fault

The gramophone man in the street has no doubt found that his revenue is increased if his reproduction is bad, and if, next time you see one of these men, you stop and listen carefully, you will probably find that he is playing the records much too fast.

### FOR USE WITH ALTERNATING CURRENT MAINS



Here you see the "Modern Wireless" stroboscopic speed-tester in use on a record. The article tells you everything you want to know about using this remarkably simple tester—but to use it you must have A.C. mains in your home.

This is a fault that is very common to all classes of gramophone and radio-gramophone users.

The importance of playing records at the correct speed cannot be over-emphasised, and it is just as important to ensure that the speed is constant and does not fluctuate during reproduction. There is only one speed at which records should be played, and that is identically the same number of revolutions per minute as that at which it was recorded.

The leading gramophone companies make every endeavour that the recording speed should be correct and constant. They do not even rely on spring or electric motors, but use a gravity motor, i.e. weight driven, to provide the motive power for the recording wax.

The majority of records, including H.M.V., Columbia, Parlophone, Zonophone, and Regal, are recorded at 78 revolutions per minute, although there are a number of records in these companies' catalogues made some years ago varying from 72 to 82 r.p.m. It can, however, be taken that unless another speed is printed on the label the speed of 78 is the figure at which the record should be played.

### Testing Methods

It is obvious that it is quite impossible to obtain satisfactory reproduction from a radio-gramophone if the motor is unsatisfactory. We are not going to deal here with the different makes of motors obtainable, but merely to emphasise that whatever motor is used it should be frequently oiled and carefully used.

Our chief concern is to ensure that the motor is revolving at the correct speed, which we will take to be 78 r.p.m., whilst the sound-box or pick-up is on the record.

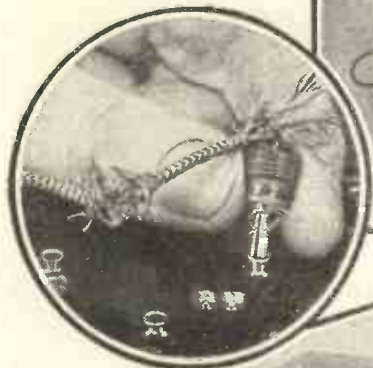
There are roughly three methods of testing the speed of the turntable



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The first is in many ways the simplest.

A strip of white paper should be placed underneath a record on the turntable so that it projects slightly

rises or falls according to whether the turntable is running slowly or quickly. When it is running at exactly the correct speed—78 r.p.m.—the

of three colours are seen according to the speeds of the motor. If it is running below 78 r.p.m. the white section is seen; when the record is running at exactly 78 r.p.m. the green strip is only visible; and if the speed is too fast the red strip fills the aperture.

The writer has also seen other models of speed-testers, depending on the same principle, abroad, but they do not appear to have made their appearance in this country. This type of speed-tester is fairly accurate, and very useful for testing turntable speed on all types of gramophones and radio-gramophones.

CUT THIS OUT

FOR YOUR GRAMOPHONE



If this indicator is placed on top of a record which is playing near an electric lamp operating from a 50-cycle supply, the black lines will appear to be stationary when the record is revolving at exactly 78 r.p.m.

"M.W.'s" special speed-tester for home use. Cut it out and make full use of it to see that your gramophone is always running at the correct speed.

Remember that this tester can only be used in conjunction with a 50-cycle lighting supply. The hole for the turntable spindle must be cut out of the centre accurately before use.

beyond the edge of the record. The revolutions of the paper should be counted with a watch in hand; commence by counting nought as the second-hand reaches nought on the dial, 78 should be counted as the second-hand reaches 60.

If 78 is arrived at before the minute is completed the motor is running too fast and should be slowed down and the process repeated until the correct speed is obtained. An interesting variation of this is to score a heavy mark across an old record, play it, and count the clicks made by the needle.

### Commercial Testers

The second method of testing the speed is by means of the instantaneous speed-testers marketed by both the H.M.V. and Columbia companies. These are made on the same principle, and depend for their action on the centrifugal force acting on a weight which revolves round the spindle of the turntable.

The speed-testers are quite small, and are mounted in pressed metal cases. They are fitted over the projecting turntable spindle on top of a record.

In the H.M.V. tester a gold disc

disc should be flush with the top of the speed-tester.

On the Columbia model, instead of a disc rising and falling there is a small aperture through which strips

### For A.C. Only

The third type of speed-tester is, however, the most accurate, but, unfortunately, is limited in use, for it may only be employed by those who have alternating current mains in their house. It is generally known that a lamp operating from a 50-cycle alternating current supply flashes on and off a hundred times a second.

If the edge of the gramophone motor turntable is marked off into 77 equal white, alternated by 77 equal black, strips, and the motor allowed to revolve beneath a 50-cycle supply, the black strips will (owing to an optical illusion) appear to be stationary when the turntable is revolving at precisely 78 r.p.m.

There is no simple mathematical formula for dividing the circumference of a turntable into this number

(Continued on page 624.)

### TESTING BY EAR AND EYE



Another method of testing speed is to make a thin scratch with a needle point from the centre to the edge of a record (indicated by a white line on the photograph). Every time the scratch passes the pick-up, a distinct click will be heard, and the number of clicks per minute can be found with the aid of stop-watch. The scratch must be a light one or the pick-up may suffer injury—and don't forget to use an old record!



# THE G.E.C. "NOMAD" RECEIVER FOR D.C. MAINS

*A powerful and selective four-valve receiver which takes no more current from your mains than an ordinary lighting bulb.*

*Reviewed by an "M.W." Technician.*



This attractive cabinet is a feature of G.E.C. designs.

**D**o you continually see advertisements and pictures of A.C. receivers which you would like to have in your home, but which you know can't be worked from your D.C. mains? Then you are just the person the General Electric Company had in mind when the "Nomad" was first designed.

Possibly you want to be in a position to add the programmes of a number of foreign broadcasters to the entertainment of your local station. The two screened-grid H.F. stages in the "Nomad" will give you all the range you want.

If it is power you are after, then the pentode output should be able to give you all you need in this direction.

#### TECHNICAL SPECIFICATION

**NUMBER OF VALVES:** Four Osram (indirectly heated). Two screened-grid H.F., screened-grid detector, pentode.  
**CONTROLS:** Three. Tuning, combined wavechange and gramophone switch, mains "on-off" and volume control. All on front of panel.  
**VOLTAGE:** D.C., 200 to 260 volts. Consumption approximately 70 watts.  
**SPECIAL FEATURES:** Heterodyne filter, "local-distant" switch, illuminated dial shown in wavelengths.  
**PRICE:** 23 guineas. Inclusive.  
**MAKERS:** The General Electric Company, Kingsway, London, W.C.2.

It really does sound the kind of set you are looking for, doesn't it?

The "Nomad" is a four-valve receiver, all-electric, comprising two screened-grid high-frequency stages, a screened-grid detector, and a pentode output. The valves are of the indirectly-heated type and the receiver is intended for use on D.C. voltages between 200 and 260.

#### Circuit Arrangements

There are three tuned, dual-range circuits which are ganged together and controlled by a single knob. The wavelengths covered are in the region of 250 to 500 metres on the medium band and 1,000 to 2,000 metres on the long, while the tuning dial is calibrated in wavelengths and brightly illuminated, a fact which makes station searching a real pleasure.

At the low-frequency end of the receiver the transformer is shunt-fed through resistance and condenser on to the grid of the pentode valve. This operates a moving-coil speaker which is incorporated in the cabinet.

So much for the circuit arrangements. In addition, however, the "Nomad" has a number of special features which are worthy of special mention.

Two aerial sockets are provided, the first for use under ordinary conditions where sensitivity is all-important, and the other intended to provide a special measure of selectivity. There is also a "local-distant" control which successfully deals with that bugbear, the overloading of the detector on powerful local transmissions.

#### Mechanically Sound

Heterodyne whistles (which seem to be growing worse every evening with the introduction of new high-power stations) have also received their share of attention in the design of the "Nomad," and a heterodyne filter is included as part of the circuit.

The General Electric Company has not been at all backward in following the prevalent fashion for reducing controls to a minimum.

By a judicious combination of the duties of several switches the number of control knobs has been reduced to a mere three. Thus the wave-changing and gramophone switching are included in the one control, tuning has a knob to itself, and the remaining switch deals with the mains "on-off" operation and the volume control. An unusual and

very effective arrangement with much to commend it.

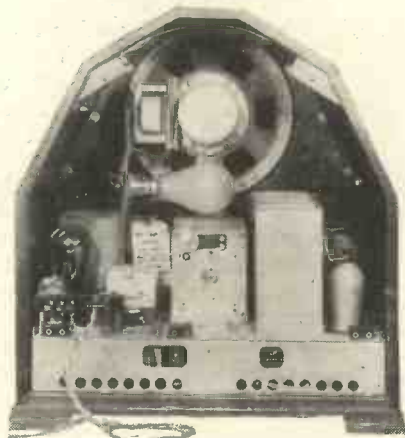
Incidentally, since the gramophone pick-up makes no difference to the receiver's radio performance, there is no need to disconnect it when changing one's entertainment—another refinement which will be appreciated by those who want a receiver to be as simple in operation as possible.

The inlaid walnut cabinet, a feature of G.E.C. design, makes the external appearance as handsome as the internal workmanship is mechanically sound.

#### Low Cost

In performance this receiver holds no disappointments in store for the listener. The model which we had on test showed not only that real selectivity was readily obtainable, but also that the quality of reproduction, an important matter now that listeners have become so critical, is maintained at a high standard.

#### DISTINCTIVE WORKMANSHIP



The "internal workin's" of the "Nomad" displayed for examination. The terminals for pick-up and external speaker can be seen at the back of the chassis.

Finally we cannot pass by the important question of cost. The "Nomad" costs 23 guineas to buy. The running costs are, literally, negligible. And there the expense ends.

# ON THE SHORT WAVES

by  
W.L.S.



ONCE more I have the pleasure of sitting down and writing a few sage words for a Christmas Number of "M.W." The weather, as is usual at the time of writing such things, is anything but Christmassy; likewise the comfortable feeling of being at peace with all the world that follows a Christmas dinner of "wise" proportions means nothing as yet!

Christmas will be meaning far more to many of my readers this year than it has done hitherto, from the radio point of view. I refer to all exiles, outcasts, "cut-offs," and the others who find themselves far from home.

### Popular Big Ben

They may console themselves by the thought that if they possess a short-wave receiver they will not be so far from home this time. For the Empire station will, according to plan, be in full swing by Christmas Day, and some of the pleasures that we enjoy at home will be conveyed to them by the medium of short-wave radio.

Big Ben, the waits, carol services, pantomimes, will all be shared with our friends abroad. Let us hope that the venture will be an unqualified success and that they all will spare the time to drink one additional toast this year—"Short-Wave Radio."

I know only too well, from the letters I receive regularly, that MODERN WIRELESS spreads to the most unexpected parts of the world, and that wherever there is a short-wave receiver there will be a little gathering of the clans. And the one item on the programme that they all want to hear above all others is the mere sound of Big Ben.

No matter what branch of short-wave reception claims your special interest, you will find these pages by our popular contributor make uncommonly good reading.

"W.L.S." combines a ripe experience and knowledge of his subject with a special aptitude for clear writing on the technicalities and cheery comment on the S.W. topics of the moment. The opening of the British Empire Short-Wave Station this month at Daventry gives a special interest to this already very popular feature.

A gentleman in Baluchistan wrote to me last year and said: "It is not radio that brings Big Ben to us out here. We do not think of microphones, transmitters and receivers. We are hearing him *direct*, across the

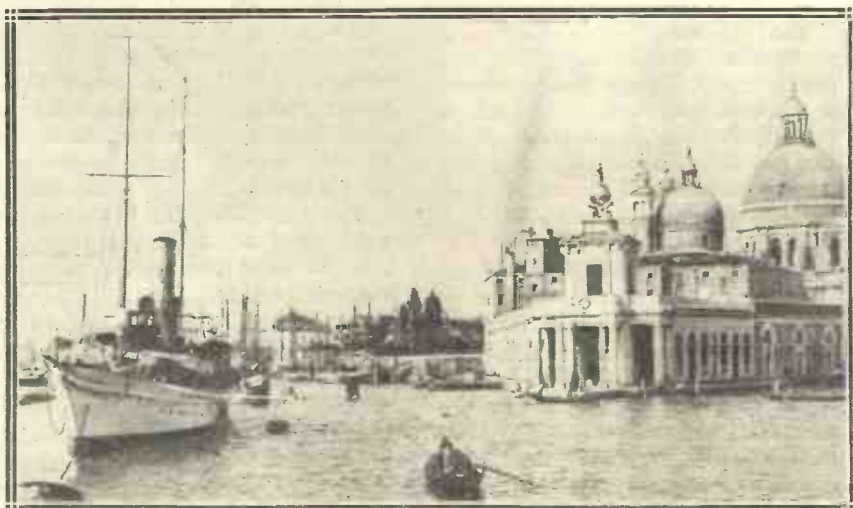
sea. I know you will be laughing at me, but that's how we all feel."

### Wiping Out Time

It occurred to me recently, when initiating a friend into the mysteries of short waves, that one of the reasons for the peculiar fascination that they have for us is surely due to the fact that time, as well as space, is completely wiped out. To be able to sit down for five minutes at 11 p.m. and to hear, first, what is happening in America at 6 p.m. on the same day, and then to change over to Australia at 9 a.m. on the following day, is to feel that time is quite unimportant!

Most of us are, by now, too blasé to feel any particular thrill about the mere fact that the music we are

### THE WORLD'S MOST FAMOUS RADIO YACHT



Venice, with the historical church of St. Maria Della Salute (right), makes a beautiful setting for the Elettra, Marconi's wonder yacht. With this world-renowned vessel he has been carrying out extensive tests on the ultra-short wavelengths.



# Every year my set gives me a 50% ★ Christmas Box



Prices from **39/6**  
or by Easy Payments

All models are similar in external appearance. Size, 9 in. by 5 in. by 3½ in.

★ "I've saved over two pounds ten on the running costs of my three-valve set this year. It used to need four batteries a year, costing over fifty shillings. Nowadays I use an EKCO Power Unit—and the cost is one shilling a year."

Whatever your set, providing you have electric light, there is a suitable EKCO Unit. All you have to do is to connect the Unit in the place of your H.T. Battery, plug into the electric light or power supply, and switch on—that's all! No alterations to set, valves, or wiring. Ask your dealer or post coupon now for full details!

*\*Based on three hours, daily use of an average three-valve set.*



To E. K. Cole, Ltd., Dept. M.W.1,  
EKCO Works, Southend-on-Sea.

Please send me illustrated FREE literature of EKCO All-Electric Radio,

Name .....

Address.....

.....

.....

## RADIO POWER UNITS



listening to is coming to us across three or four thousand miles; but the solemn thought that we can stretch round the world and pick out almost any time of to-day or the next day to listen to is surely quite inspiring!

### Fascinating Features

Just now conditions are not particularly good, but I think we have all got accustomed to the fact that the general level *is*, and *will be*, bad for a year or so. Reliable reception is the exception, rather than the rule, with the majority of the stations that are regularly on the air. That to me is one of the most fascinating features of short-wave work, and it doesn't worry me at all.

Personally, I should be bored stiff with short waves if I knew that I had only to switch on my set, turn the dial to a pre-determined reading, and receive Nairobi, or Sydney, or Winnipeg, loudly and clearly. The element of uncertainty adds zest to the business, although it causes the heads of commercial concerns to tear their hair on occasions.

It is quite reassuring to the amateur transmitter to visit a large commercial short-wave station; to see hundreds of yards of transmitter, ranged along benches, starting with the crystal oscillator and proceeding through stage after stage of amplification, finishing up with a valve the size of a young balloon; and then to see "U.C." (un-commercial) entered against blank day after blank day in the log.

### Clamouring for Waves

For all that, however, the commercials are making tremendous use of the short waves; and I am told that the sound of commercial enterprises clamouring for "more waves" at Madrid is as the sound of rough seas sweeping up the beach at Brighton.

I don't think broadcasting services are likely to acquire wider short-wave bands for a very long time. Although we speak of the short-wave broadcasters as if they are crammed together in narrow groups, that is far from the case.

Look at the 19-metre group—

between 19.36 metres and 19.9 metres we have seven stations, but the band-width is 425 kilocycles! Sixty kc. per station seems a pretty liberal allowance.

Between 31 and 32.5 metres there are fourteen stations; even here the band-width is 435 kc.—31 kc. per station. The 49-metre band is not so well off, for between 48 and 50 metres (a space of 250 kc.) we have twenty-five stations. But even that spacing of 10 kc. per station is better than we are allowed to have on the medium broadcast band.

### Complaints About Morse

And I haven't even mentioned the fact that, whereas on the medium band there is more than a chance of all the stations being on the air together, on the short-wave band

ing about the Morse station H A T, apparently on about 46 metres, but using such a vile spark-like note that he might be almost anywhere. With my own short-waver, which is fairly selective, I can hear a faint under-current from this station anywhere between 70 and 20 metres, when the set is not oscillating.

### Takes the Prize

Even with the receiver oscillating he is loud enough to be annoying all over the 40-metre amateur band. And I really think he takes the prize for broad transmissions, for I have actually heard him on the *medium broadcast band* at sufficient strength to come through London Regional's programme.

Even the amateurs could show some of these commercials a thing or two.



### WIDELY TRAVELLED!

This small set, which is being tested on a Zurich roadside, is the one that Professor Piccard took with him on his excursion to "the highest ever."

that is practically impossible. Just consider!—between 48 and 50 metres there are stations in America, Africa, India and Europe.

Even if they were all transmitting together, we should never *hear* them all at once; and it is unlikely, on account of the time difference, that they would all be transmitting at once.

I don't suppose many readers have ever come across a bad case of heterodyning between two short-wave broadcast stations. No; there is far more trouble being caused by commercial stations working "off-wave" and with rank bad notes.

I have just recently had a huge crop of letters from readers complain-

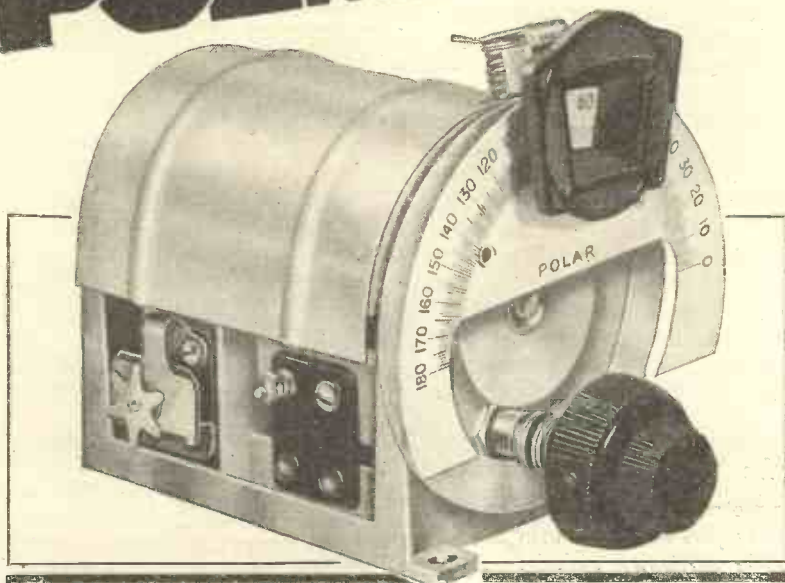
At all events, *they* don't use "1912" notes in 1932. H A T, by the way, is a Hungarian commercial station. One doesn't hear British *short-wave* stations coming through on the broadcast band even when they are five miles away; what sort of a time they have in Hungary with this "H A T" man can hardly be imagined.

### An "Ideal" Set

I have in front of me a letter from a reader asking whether I will be candid enough to tell him exactly what I would make if I intended to have the very best possible receiver for receiving short-wave broadcast. Expense no object—"de luxe" model—easy to operate—reliable—



# POLAR



*Specified and Recommended*

for "Modern Wireless"

"DIODION SUPER-HET. 7"

and

"Whole World Five"

and by

Mr. SCOTT-TAGGART

for his

"S.T.400"

(Described in the "Wireless Constructor")

## The "UNIKNOB"

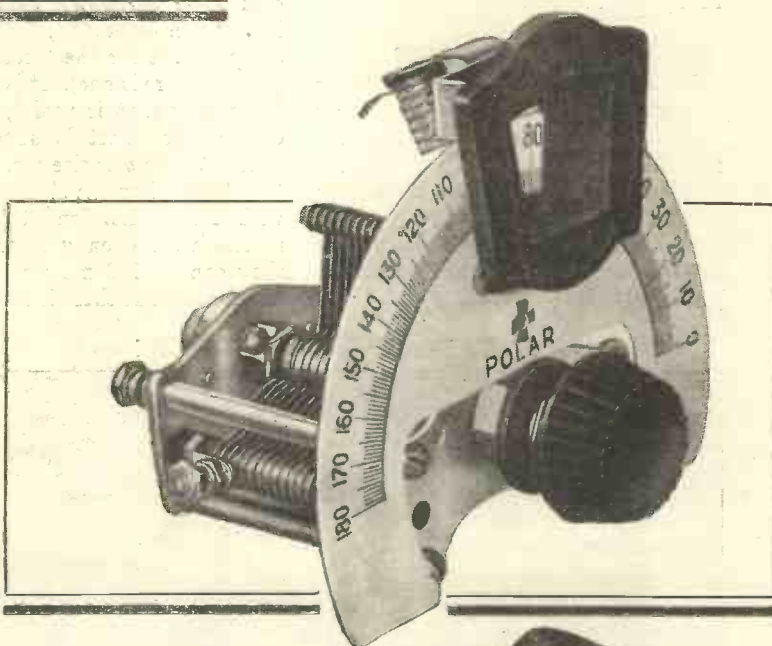
*Specified for the "DIODION SUPER-HET. 7"*

The "UNIKNOB" is one of the New Polar "Star" range of Ganged condensers, and is already famous for its originality of design, unusual accuracy of matching and extremely sturdy construction.

Its design greatly simplifies tuning. A trimmer of .35 mmf. in parallel with the front section is operated by a small knob situated concentrically with the tuning knob. Matching is accurate to within  $\frac{1}{2}$  of 1% plus or minus 1 mmfd. and the construction maintains this accuracy under all conditions of use. 2X 0005

**19/6**

(Including Cover)



## The "APERTURE"

*Specified for the "DIODION SUPER-HET. 7"*

A slow motion condenser of unique design providing a most convenient method of control. Operation is by small knob at the base, the scale being actually part of the condenser itself. Simple fitting—one hole only being required for escutcheon.

Built of aluminium. Of extremely efficient design and construction. Lamp holder for scale illumination.

**7/6**

'0005, '00035, '0003

### Other Polar Condensers recommended:

For the "Whole World Five": "Star" 3-gang, 25/6; Type C Short Wave '00025, 10/6; No. 4 Reaction '0001, 3/9; Compax '0003, 2/6; Pre-Set '0001, 1/6.

For the "S.T.400":

Differential '0003, 3/-; No. 4 Reaction '00004, 3/9; Pre-Set '0903, 1/6.

## The "No. 2"

*Recommended for the "S.T.400"*

The precise workmanship and amazingly low price has proved this to be the most outstanding condenser of its type. Its popular features include Fast and Slow motion, ball-bearing spindle, positive pigtail connection, one-hole fixing. It follows mid-line law, and is made in hard aluminium, with brass pillars for rigidity.

**6/6**

'0005, '00035, '0003



Write for the Polar Catalogue M/2. Free on request.

# CONDENSERS



luxurious appearance—and so on. Why any reader should want to tempt me like this I don't quite know, but I will answer in plain language.

The set would undoubtedly be a super-het.; it would also be a radiogram. I should build it in a pedestal cabinet, but the set itself would be of the chassis type, and completely screened. I should divide the short waves into two bands—18-30 metres and 29-60 metres, and would arrange wave-change switching of the simplest possible type.

I should certainly make it an "all-mains" job; and I should probably work it from an indoor aerial to reduce background noises.

**Set Par Excellence**

Now, having given the plain answer that was required, I will start raising objections. A set of the type I have mentioned would probably give more employment to a *listener* than any other type of short-wave receiver, but I think the "DX-minded" or experimentally-minded man would be grievously disappointed.

The super-het. is undoubtedly a set par excellence for telephony reception; but most short-wave enthusiasts inexplicably develop an interest in Morse after a while. There is nothing for the reception of distant Morse so good as a simple detector and note-mag., with provision for switching out the note-mag.

A super-het. would beat all-comers on reasonably strong broadcast stations, but, as I explained last month, I don't think it would show up nearly so well on those terribly weak, almost "unreceivable" signals as a set with the smallest possible number of valves.

When someone produces a dead-silent valve, the multi-valver will come into its own for short-wave work! Until then it will nearly always defeat its own object.

**The "Ultra-Shorts"**

Five-metre work is coming on splendidly just now, and bringing its own little mysteries with it. As I have often explained, there is apparently no use for the "reflected ray" (even if there is one). It is the ground-wave only that is useful, and this is excellent for short-distance work.

What does surprise me, however, is that South London stations can work with North London stations on 5 metres with even greater ease than they can on 160 metres. This points to the fact that there is less absorption

of the shorter wave. Why this should be so I cannot attempt to explain.

I have left my own 5-metre transmitter running, while cruising round the countryside with a 5-metre

**DID YOU HEAR HER ?**



Mrs. Amelia Earhart Putnam giving an impromptu address in aid of U.S. unemployed. It was relayed by many of the U.S. short-wavers.

receiver, and have satisfied myself that signals are stronger in several places than they would be with a 160-metre wave. True, they disappear completely as one goes under railway bridges, or to the "leeward" side of galvanised iron fences, but, in general, they spread out uniformly, and even hills do not have the serious effect that was predicted for them.

**Important Development**

Two transmitter friends of mine have recently taken out transmitters and receivers into the hills of Surrey and Kent and covered surprising distances on 5 metres with very low power and *ridiculously* simple gear. Duplex telephony is possible with a couple of transmitters that take up no more room than a moderate-sized attaché-case.

Here, surely, is a very important development of the "ultra-shorts" for the future. There is almost enough space between 3 metres and 1 metre to run a complete telephone service for a town without interference! 200,000 kc. is a fairly broad band!

Prophets generally look ridiculous at the time of making their statements, and I have no wish to join them, but it might be interesting to refer back to these notes in, say, 1972.

**A CASE FOR THE POLICE!**



Sending out a message to the patrols from police headquarters in Newcastle, where an elaborate and effective system has been installed to checkmate the smash-and-grab and other quick workers.

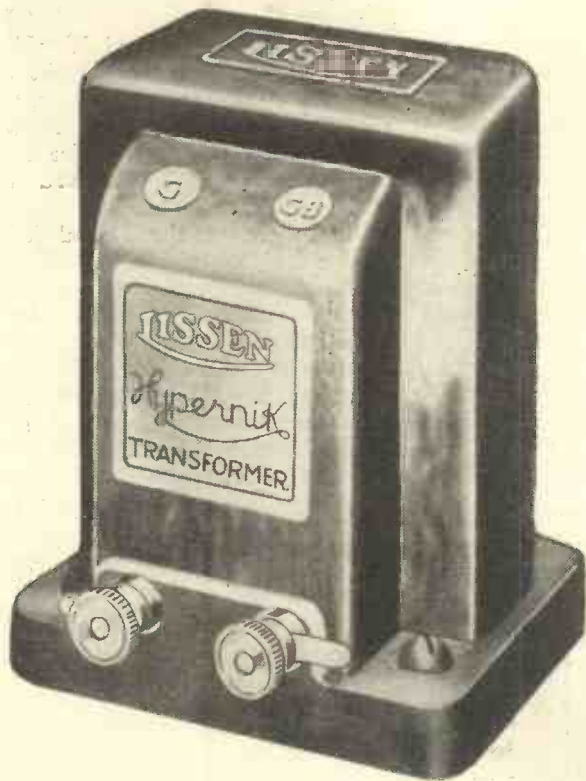


# Mr. Scott-Taggart's DEFINITE CHOICE

IS THE

# LISSEN

## HYPERNIK TRANSFORMER



You CANNOT build the S.T.400 exactly as the ORIGINAL unless you *do* use a Lissen Hypernik Transformer. If substitutes are offered you, ask yourself this question: "Why did Mr. Scott-Taggart choose Lissen Hypernik for his own S.T.400?" The answer, of course, is that to get the fine results for which he was planning, a REALLY GOOD TRANSFORMER WAS NECESSARY—and you will be wise to let his FIRST CHOICE be yours!

Follow the ORIGINAL

# S.T. 400

SPECIFICATION—GET A

With a primary inductance of fully 100 henries, the Lissen Hypernik Transformer yet operates perfectly when passing currents up to 5 m/A or more. Its step-up ratio is 4 to 1, and a stage amplification of more than 100 is obtained. PRICE

# 12'6

# LISSEN HYPERNIK TRANSFORMER

# SPOTLIGHTS



# PROGRAMMES

*The First Ten Years—Smacking the B.B.C.—Back to the Fray—Value for Money—Cochran of the Microphone.*

TEN years of Broadcasting. Or, rather, what is more important, ten years of listening.

What do we, who have listened since the earliest days of the British Broadcasting Company, think to-day as we look back over these ten crowded years?

We have found much in the programmes to criticise, much with which to find fault. We have tried at times to point out to the officials of Savoy Hill, and, later, of Broadcasting House, the error of their ways, and to suggest how they could return to favour.

Sometimes our efforts have met with success; more often they have been doomed to failure. But we have persevered because we are fond enough of broadcasting to want to see British programmes the best in the world.

I venture to think we have almost succeeded!

### *Forgiven and—Forgotten*

You think we are being sentimental, that we are allowing ourselves to be turned aside from our high purpose of criticism.

You are probably right. But when we feel that we have watched

the B.B.C. grow up into quite a big boy, smacked it for its little wrongdoings, praised it for its acts of thoughtfulness and consideration—well, we just can't help feeling a little bit of sentiment when we attend its tenth birthday party.

And remember, too, that as we look back over the years it is the good things, the clever programmes, the human touches, which stand out most clearly.

### *Do You Remember?*

What a lot of good things there have been!

Do you remember the King's

**"NOW IS THE TIME FOR DANCING"**



"Henry Hall and his band have improved beyond recognition since they realised that their programmes had to appeal to a large number of non-dancing listeners." So "Here's to the next time!"

speech at the opening of Wembley, and how wonderful we thought it? And the Armistice programmes, and the Surprise Items, and Melba's farewell, and the first service from St. Martin's-in-the-Fields, and the Children's Hour?

Then there was the General Strike (responsible for making the B.B.C. a corporation under Royal Charter) and A. J. Alan's first talk, and the Toy-Time plays from Hulme Beaman (whose sad death children of all ages will never forget), and the old birthday programmes when the staff became human beings for one night and found it very pleasant, and more recently "The End of Savoy Hill."

Why, the list is unending.

### *With Many Thanks*

And we cannot forget the many inspirations which have provided unbelievably touching programmes. Two of these spring to my mind to-day. The spontaneous expression of gratitude at the King's recovery from his most severe illness (a remembrance which earned the personal thanks of His Majesty), and the birthday party (just fifteen



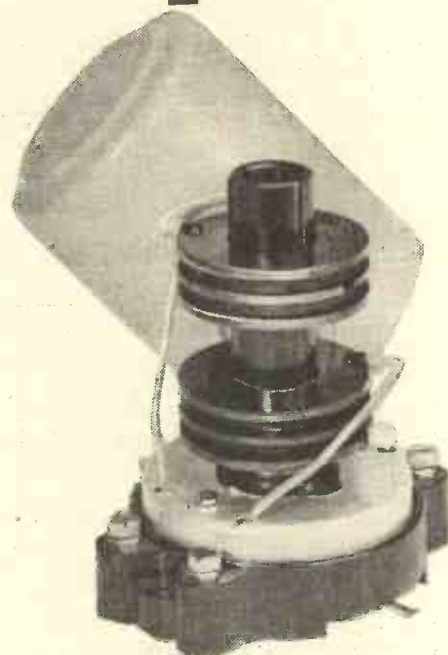
# Colvern Coils

in conjunction with Colverdyne Intermediates

for the

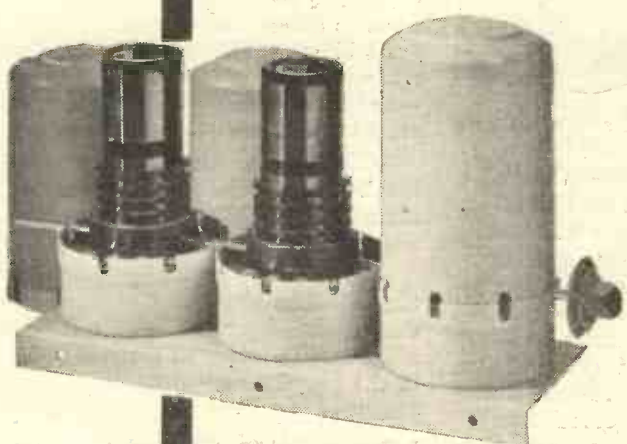
## DIODION SUPER-SEVEN

ensure correct balance and maximum efficiency



In receivers of outstanding design Colvern Coils are incorporated . . . Colvern Screened Coils are accurate and reliable, their inductance being guaranteed to be within  $\frac{1}{2}$  per cent.

COLVERN INTERMEDIATES are readily adjusted to give maximum sensitivity and will retain the desired setting indefinitely.



2 COLVERDYNES, TYPE 110 - 12/6 each	} - 30/-
1 K G C	
1 K G R	
1 K 63 (OSCILLATOR)	Set of 3

Colvern Coils were also specified by Mr. John Scott-Taggart for the "S.T.300," and again for the "S.T.400." "S.T.400" Coils 9/10 per pair.

**There is a Colvern Coil for every Wireless Circuit**

Send for Radio List No. 10.

Colvern Ltd., Mauney's Road, Romford, Essex

## News and Views about Programmes and People

minutes) given by the staff to old Charles Coborn on his eightieth birthday.

We received these programmes with very many thanks, and we found in them a proof that the B.B.C. would like always to be human—if only circumstances would allow!

### Many Happy Returns

At the end of the first ten years, therefore, there is much gratitude in our hearts as we wish Sir John Reith and all his helpers "many happy returns." And although we shall immediately return to the fray and offer our criticisms and suggestions and blame for the next ten years, we do so with the knowledge that the B.C.C., though still very far from offering us the perfect entertainment which is our due, will nevertheless leave behind it each year something of merit which we

### The Man Next Door

Do you realise that listeners—and by that I mean you and I and the man next door—provide the B.B.C. with many hundreds of thousands of pounds every year with the implied condition that it shall be used for entertaining us?

The question is not whether we get our ten shillings worth out of the B.B.C., but whether the B.B.C. provides us with the hundreds of thousands of pounds worth of entertainment for which we have paid.

### Wanted—A Leader

What Broadcasting House wants is a C. B. Cochran. How many of the bright young men in charge of the

any reader who could arrange two alternative radio programmes in the same order as that selected by a distinguished panel of judges.

Apparently these judges consider that we should take what we can get and be thankful, for if revue is a suitable alternative to vaudeville, then I'll eat my hat.

Even Broadcasting House can do better than that.

### It Seems To Me

—That Henry Hall and his band have improved beyond recognition since they realised that their programmes had to appeal to a large number of non-dancing listeners.

—That the B.B.C. Sunday programmes are now becoming a happy relief from the song-plugging and dull programmes offered by English firms from Radio-Paris.

—That it was a mistake to broad-

### In the Programmes—3

#### LANCE SIEVEKING

Major Lancelot de Giberne Sieveking, D.S.C.; born in London in 1896, at the same time as the "Daily Mail" and the Motor Car Act; of Scandinavian origin. At 13 years of age was 6 ft. 6 in. in height, and is still as high to-day at 36. Not strong enough to go to Harrow, so joined the Artists Rifles in August, 1914. Commissioned in the Navy, 1915, and, just to make a complete job of it, transferred to the Royal Naval Air Service. Active service in France and East Africa. Prisoner of war, 1917.



Went up to Cambridge in 1919—edited "New Cambridge" and made himself heard in the Union. Wrote a number of books, one of which—"Stampede"—was illustrated by G. K. Chesterton. Being by now fully qualified for broadcasting work, went to Savoy Hill in 1926. Started running commentaries—foreign "National" Programmes—and the first television play—meritorious deeds of which most listeners are unaware! Famous for "End of Savoy Hill" programme, and notorious for "Arrest in Africa."

Has written and produced 40 original programmes, and received more abuse from radio critics than anyone, with the possible exception of Sir John Reith.

can remember when the mistakes and the carelessness have been forgotten.

### The Other Side

I have been severely sat upon recently by listeners who have taken exception to my suggestion that the B.B.C. programmes are at times really bad.

I have had the old, old story thrown at me once more—"however bad the programmes are, you cannot deny that every listener gets his ten shillings' worth."

I wonder if Sir John Reith considers that the sole duty of the B.B.C. is to provide ten shillings worth of entertainment to each listener every year? I hope he doesn't, because I look at it in a very different light.

How does the other side of the story strike you?

programmes have had any experience of public entertainment?

They can only gauge the public likes and dislikes from the letters they receive—and the people who matter don't like writing letters.

The programmes need nothing to-day as much as a leader who knows, because he has had to make his bread-and-butter from that very knowledge, just how to provide suitable entertainment for varying occasions.

### Things Might Be Worse

However, I find that things might be worse. Perhaps you have noticed that a certain daily newspaper has been offering large sums of money for

cast "The Three Musketeers" in two parts on different wavelengths. There are still some listeners with crystal sets who can only get one programme—and besides, London Regional provides very bad reception in the south.

—That it is time someone else besides John Drinkwater turned his attention to radio plays. We are still waiting for some more "Waterloo."

—That it was a great pity to deprive the B.B.C. staff of its "night out" during birthday week. This family affair used to be one of the best items in the programme.

—That if the recent birthday week was a sample of everyday entertainment, we critics would soon be out of work.

—That many people wouldn't mind that either.

P. C.





# IN PASSING

## A Salute to Inventors

FOR the whole of Christendom, except Steven Bunge, it was Christmas Night. For Bunge it was just the end of one of those days on which the Stock Exchange is closed and Oils cannot ease a point, nor Copper sag; simply a lacuna in the life of a Bunge.

### Post-Prandial Reflections

Anne, his niece and housekeeper, having seen and heard him slosh his way through six courses and two-thirds of a bottle of port, had left the house in search of youth, laughter and noiseless eaters. Bunge, for his part, promised himself a pleasant

### NOT WISELY, BUT TOO WELL



"—having sloshed his way through a six-course dinner."

evening with his Investments Register and the prospectus of his new baby, Synthetic Milk Foods, Ltd.

Bunge waddled to his snuggery, got a siphon and a decanter of whisky, dumped himself into his armchair before a roaring fire, and lit a huge cigar. Then he mixed a drink, poured half of it down upon that port aforementioned, and opened the prospectus. After ten minutes had passed in silent worship of the Golden Calf which sucked life—giving gold from

that great, silly Cow, the Public—he became aware that he was not completely at ease; Estimated Profits palled, and Four and a half per cent Participating Prefs. did not look very participatory. And that rotten Adolf Luks was on the Board, too!

Of course! He remembered then! Anne and that young fool William White, who called himself an inventor and hung around Anne like a sort of faithful dumb animal, all its soul in its eyes, and so forth. They wanted him to take up some preposterous paraphernalia, invented by White—some-

**Telling of Christmas Night, Mr. Steven Bunge and the remarkable effects of a six-course dinner. Of course, the whisky may have had something to do with Mr. Bunge's encounter with the tiger, but—well judge for yourselves!**

thing to do with the Marconi wireless—seeing by wireless!—and form a company to exploit it. Bah! What did they take him for? Well, to please Anne, and because he hadn't the pluck to face a "scene," he had offered to buy the thing outright for fifty pounds!

### An Offer Refused

A lot of money. Fif-ty pounds. Not easily come by and not to be sneezed at in these hard times when cigars cost half-a-crown apiece. And they had refused it; they wanted a share in the business, or royalties, or some such nonsense. Absolutely out of the question. Why, if the thing did what was claimed for it the profits would be enormous. Was one to pay a two-penny mechanic thousands a year? Here he finished his drink and mixed another.

His gaze encountered a handsome cabinet which was not an old inhabitant of the room. He had to lean forward a little to see it properly because the air seemed to be hazy.

Ah, yes! This White fellow had made a model of his notion and mixed it up with a radio receiver. So there wash—

### CAVE-MAN STUFF



"A paleolithic person like Congorilla or Tarzan."

was—the darned thing, in his sanctum. Nothing like rubbing it in! No—nothing! He had a gulp of whisky and soda and relit his cigar, after a certain period during which the business end appeared to be dodging the lighted match. Deliberately!

### Seeing Things!

Werrll! He didn't hold with music or wireless. *Nonshense!* He closed his eyes and at once floated, chair and all, towards the ceiling. He was tempted to hang on to that course in order to see whether he could get a free passage to the Milky Way, but, suddenly, something impelled him to open his eyes—and there he was, in his chair on the floor. Queer! He shut his eyes again and—*who-o-o-p*—up he went, floating like a feather.

*Mush* be careful. Took a drink to steady his nerves, and made a note, "Not shut eyes." Turr knobs on funny cabinet with glass door. Thash ri! Knobs—turrem.

The screen on the television set sprang, as it were, to life before Bunge's dimmed eyes, which saw Asric Asboldstore, disguised as a caveman, fighting with a lion—a tame lion, I may add. Bunge started forward, to make sure that he was really seeing "lion," and then hurriedly

## "Woolly's Rage Knew No Bounds"

gulped a couple of fingers of neat whisky. Thereafter he sank back into his chair. Anne was at that time playing *tableaux vivants* round at the Scoresbys, William White being the proud wearer of a ginger beard, a false and very purple nose, and a straw hat three inches in diameter.

Owing to his having kissed Anne twice—once on the offside little finger and once on her near shoulder—William White was slightly delirious. He was, in fact, much nearer the

### FOREST FAUNA



"Down from a tree dropped quite the wickedest-looking kind of sabre-toothed tiger."

Milky Way than was Mr. Bunge. Love has the bulge on whisky!

Our Mr. Bunge seemed to be wandering along a lone seashore, whereon no bather or deckchair appeared. Presently he saw a cave in the chalk cliff. Cold and hungry he stumbled towards it. At the entrance sat a Paleolithic person who dimly reminded Bunge of "Congorilla" or Tarzan. This Early Man was busily knocking a piece of flint against a lump of iron pyrites, both of which treasures he had picked out of the chalk.

### The Fire-Maker

"Perhaps you'll stop that silly tapping and let me in. I'm very cold," said Bunge, always the Imperious Director of Companies. But the hairy fellow simply said: "I am smiting thus that I may obtain fire. The people laugh at me. But there is a secret in the hearts of these stones which shall change their lives." Whereupon fire came and Bunge and Woolly Willy were comforted.

Then said Bunge: "I'm hungry."  
"Go, kill, eat."

So Bunge crawled up to the Downs, just about where Beachy Head is today, and spent many miserable hours in useless attempts to kill rabbits and birds. There were larger animals

there, but they laughed at his stones. So he went back to the fire, prepared to die.

Woolly Willy was in a mighty state of excitement. It seems that he had been feeding the fire with stones which melted into a stream which cooled into a stuff capable of being beaten into large arrow-heads. He had rigged up a bellows made of a sheep's skin, and was producing a huge chunk of metal. This he began to beat with flint, and presently The Knife was born. With The Knife Woolly slew a bear, and that evening he and Bunge stuffed themselves to their great content.

### An Awkward Situation

"Clever chap!" ruminated Bunge, as he curled up for the night. "Discovered fire and smelting. Deserves a letter of thanks and a small bonus."

Next day it was Bunge's job to go out and hunt with The Knife. He managed to kill a small deer, miles away from the chalk Downs, among the forest land, and a nasty piece of work he made of it. As a butcher he would have earned no bonus. Then—*plunk!* Down from a tree dropped quite the wickedest-looking kind of sabre-toothed tiger imaginable, intent on either Mr. Bunge or his deer—or both.

This situation could not be met by a Special Resolution at an Extraordinary General Meeting; it was not even to be dealt with by an amendment of the Articles of Association. Mr. Bunge therefore grabbed the (largest) piece of deer within easy reach, leapt upon a nearby bicycle and pedalled off regardless of his weak heart. "Heaven bless the inventor of The Wheel," said Bunge, as he free-wheeled down to the cave.

Woolly's rage knew no bounds when he found that Bunge had left the meat behind and had brought home the head and half the tail. He felt that the occasion demanded special action. So he produced violent contact between a flint and our Mr. Bunge's skull, insomuch that our Mr. Bunge left the vicinity as swiftly as he had reached it.

### Meet Faraday

Bunge dropped from the ceiling into his chair with a jolt, and took (a) one gill of whisky; (b) a pull at his cigar, and (c) one glance at William White's new and improved television

receiver. The gill promptly exercised its prerogative and swooped him and his chair up through the ceiling and to further interviews with inventors. He met Faraday at the exact moment when he stood in dire need of light, and Michael kindly allowed his dynamo to supply current to the lamp which Swan was clever enough to make.

### A "Deal" by Wireless

"Really," said Bunge, "these technicians have earned the thanks of the Board."

Just then he remembered that he had to instruct his New York broker. Ships took too long and were sometimes wrecked. At that moment, however, Marconi, in the teeth of the sceptical sneers of the unco' learned, was building a wireless station at New Brunswick, and he accepted Mr. Bunge's message, and, what is more, delivered it in New York in time for our hero to make £209 on Alabama Cotton, Inc.

The £209 did not comfort him greatly, for he fell sick; nothing

### PAINFUL EXTRACTION



"But the anaesthetic! I've not gone off yet!"

definite by way of symptoms appeared except a pricking pain near his heart. As he fled from doctor to doctor, shedding cheque after cheque, so the pain grew worse. Nothing the doctors did, nothing they said, nothing he took as medicine, no regime of diet he adopted, made the slightest difference to that pain. Nor did he enjoy any periods of relief from the pain; not even drugged or drunk could he sleep for more than a few consecutive minutes.

He used to think: "If it is like this now, what will it be in a month's time?"

And he would press his hand to the place, whereupon the pain became much greater. At last, a

(Continued on page 625.)

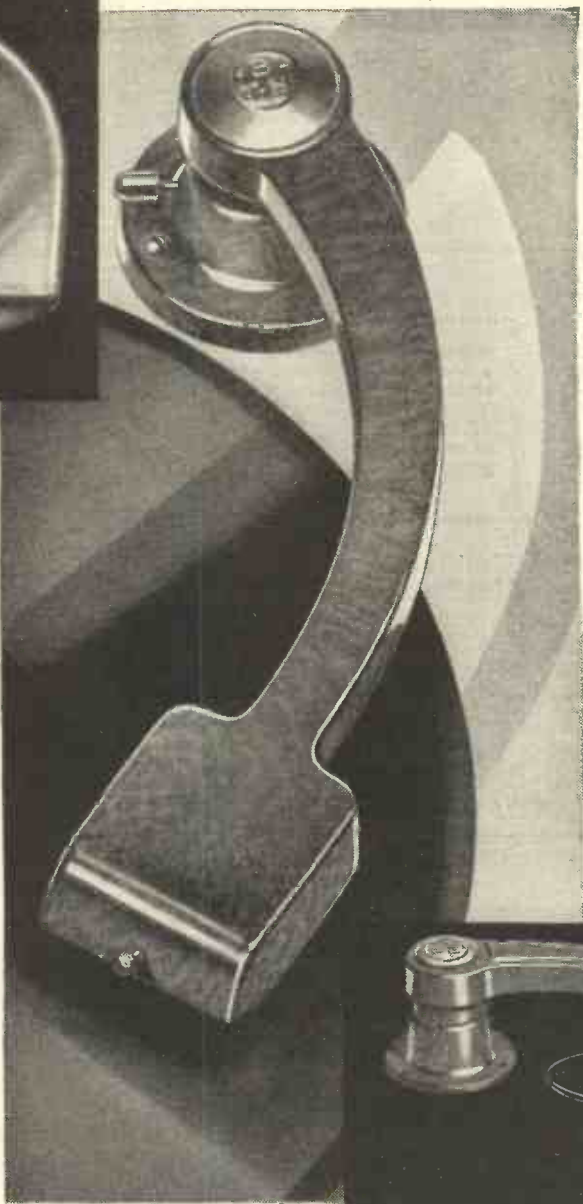




**B.T.H. MINOR PICK-UP** has been re-designed and improved and now includes a special volume control fitted in the base of the tone-arm pillar. This model is constructed in a one-piece moulding of B.T.H. "Fabriolite" and is recommended to those requiring a highly efficient but inexpensive pick-up. Price 25/-.

**B.T.H. SENIOR PICK-UP (1933 model)**. This has been completely re-designed and gives an even better response curve than hitherto. Free coupling of the head to the tone-arm reduces pressure on records and facilitates needle changing, and a ball-bearing universal joint on the tone-arm support ensures easy tracking. And independent and specially designed volume control of correct value is supplied with this connoisseurs' model. Price £2.2.0 complete with volume control.

**B.T.H. SENIOR PICK-UP** complete with four adaptors to fit standard tone-arms. Price 27/6



**THIS  
PICK-UP  
MINDS  
ITS OWN  
BUSINESS**



**PICK-UP  
and Tone Arm**

**EDISWAN RADIO**

It's a pick-up that doesn't take liberties with the record—it plays all there is on the record—no less, no more. That is why leading radiogram manufacturers use it; why radio engineers choose and recommend it—for its even, accurate and sensitive response over a wide range of frequencies.

**All good radio dealers stock B.T.H. pick-ups and will be pleased to demonstrate them.**

THE EDISON SWAN ELECTRIC CO. LTD.

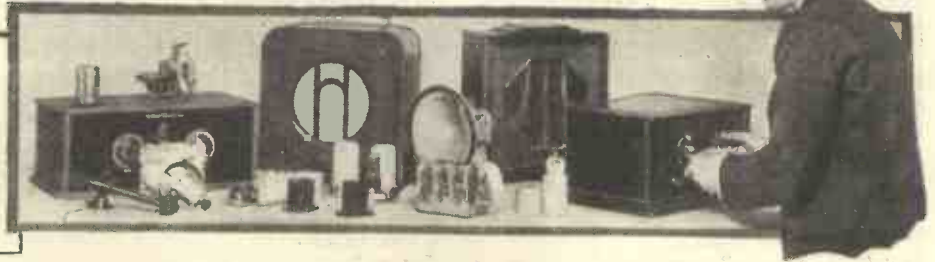


155 CHARING CROSS RD., LONDON, W.C.2

W194

# AT YOUR SERVICE

by  
**OUR TRADE  
COMMISSIONER**



I HAVE just returned from a visit to one of the most up-to-date radio factories in the country. Everything is mechanised up to the eyebrows, and from the vast lengths of travelling belts, the overhead chain carrier systems, the electric water heaters, to the electric, automatic hand-dryer installed beside the wash-basins, the whole factory is the last word in efficiency.

Ferranti (for it is their factory that I am describing) are not content with just possessing a well-trained, hard-working staff of some thousands, they are intent on keeping it. So Vita glass is used on much of the roofing with marked success on the health of the workers, who, of course, are mainly girls.

Hollinwood is not a salubrious neighbourhood—Lancashire is more concerned with work than scenery—but the Ferranti factory must be one of the healthiest spots in the district. And it is no mere "spot" either; it extends a dickens of a way on all sides, covering every process in the construction of radio sets, components, meters, electric switch gear and registering instruments, electric fires, power transformers and so on.

### Rumour is False!

Super-hets. are being turned out as hard as they can, bearing in mind that every set goes through not only a final test of great severity, but stage tests on its "innards" as it is assembled.

And here I would like to give the lie to a rumour that Ferranti valves are not made by Ferranti, but by some valve concern on contract. They are made throughout by the firm whose name they bear.

*Some trade news and views that are of interest to readers, whether or not they are connected with the radio industry. Members of the trade are invited to send items of interest, or photographs, to be included under this heading.*

Incidentally, I heard the latest thing in Ferranti home-construction receivers while I was there—a set that has an output of from 6 to 12 watts, undistorted. It is built on quality lines, and the amplification curve, when you see it, will astonish you. Full details are in the hands

### "DANCE THIS ONE WITH ME"



These two happy souls have invested in an H.M.V. portable, which incorporates a novel record tray that holds twelve records.

of the printers (they would have been there earlier if I had not blown in and taken up Mr. Baggs' time just as they were going to press), and they will be published shortly.

### For the States

In order that a Metro-Goldwyn-Mayer film producer in Hollywood shall be able to judge the length of the laughs for the film of Ivor Novello's play, "Party," the public performance of the stage production was recorded by H.M.V. recently at Golder's Green Hippodrome.

This is believed to be the first time that the gramophone has been asked to record the complete performance of a play, and in this case the records should be valuable, not only for the duration of laughs, but for the film director to gauge his production.

The £10,000 mobile recording van from Hayes was used for this venture, and six microphones were concealed in the footlights and stage furniture, whilst an additional mike was used to pick up the applause and laughter of the audience.

### They're Not Cheap

As a single twelve-inch plays only about five minutes, and the performance occupies over two and a half hours, over thirty waxes were used. As one wax was filled another was started, giving sufficient overlap to avoid missing anything.

These records will be the most expensive that have ever been made, for only a single copy will be taken off each wax, and the discs will not be published. The film producer will have to pay some £300, a little under £10 per record.



## MODERN COMPONENTS FOR "MODERN" SETS—"GOLTONE"



**"GOLTONE" "COSMIC"  
SHORT-WAVE COIL**

As selected by Designer for the  
**"WHOLE - WORLD 5"**  
The coil which was originally  
specified.



**"GOLTONE"  
SUPER H.F.  
CHOKE**

As employed in the SEVEN-  
VALVE SUPERHETERODYNE  
Baseboard or  
Valveholder] **4/6**  
Mounting. R3/46



**"GOLTONE" SCREENED  
DUAL-RANGE COILS**

As used in the "PROGRAMME  
PRINCE" described in "M.W." Novem-  
ber, 1932. Types G.G.C. and G.G.R.  
For modern receiver designs, these  
"Goltone" units will meet all  
requirements. Made in 5 types to  
suit every modern circuit.  
**MATCHINGS**—  
Special attention has been given to this  
point to ensure successful ganging. The maxi-  
mum permissible variation is  $\pm 1$  per cent,  
although the average is rarely  
more than .8 per cent.  
PRICES for all Types, Each **5/9**

3-Point push-pull switch, R26/745.....	10d.
Terminal blocks, without terminals, R8/99, per pair.....	9d.
Metal screened twin flexible gramophone pick-up lead, R43/98, per 10ft. coil.....	1/-
6-Way battery cord, 30" overall length, R40/41.....	2/4
Tripole terminals with engraved discs, each.....	3d.
Wander plugs with coloured insulated knobs, doz.....	1/-
Rigid valve holders 4-pin, each.....	6d.
Ebonite panels (madrilled) supplied in all standard sizes from stock.	

Obtainable from all first-class Radio Stores. Refuse  
substitutes. If any difficulty write direct. Large illus-  
trated Radio Catalogue sent Post FREE on request.

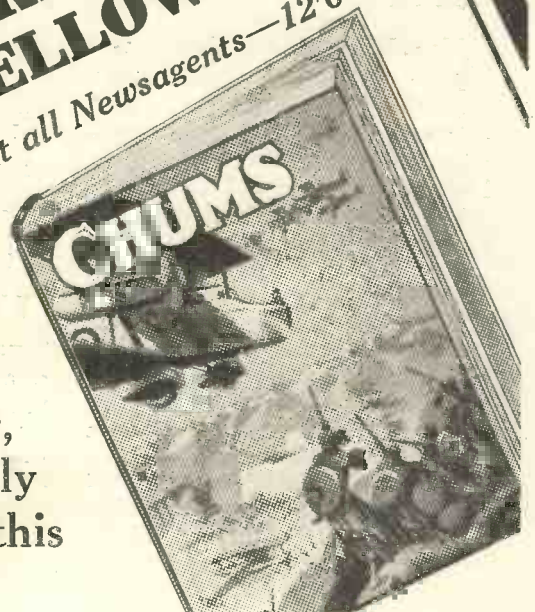


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At all Newsagents—12/6



## News and Views of the Trade

### The L.F. End

Are you interested in the low-frequency end of your radio set? Of course you are, whether you be home-constructor or dealer. Therefore, you will be interested in the R.I. pamphlet describing the Parafeed coupling unit—that incorporates the famous Parafeed transformer with the necessary resistance and coupling condenser in one case.

The pamphlet is particularly useful in that not only does it describe the unit itself, but it gives circuits for the use of the Parafeed Coupling Unit in ten different circuits. The curve of voltage amplification drawn up by the National Physical Laboratory is provided, so that the excellence of the unit can be seen at a glance. You should write to Radio Instruments Ltd., at their Madrigal Works, Croydon, for this leaflet—it's worth having.

### Fully Guaranteed

An unconditional guarantee is carried by the famous Erie resistors not to open-circuit during service. This is sure indication that the manufacturers have the fullest confidence in their product, and, indeed, they should have, for the Erie resistor is a fine piece of work.

They are concisely described in a folder that has just reached me and of which copies will be sent to any inquirer who writes to Erie Resistor Ltd., Waterloo Road, N.W.2.

I have but one criticism to make concerning this excellent folder. Why did not the firm concerned give their name and address on the folder? It is an unfortunate omission.

### Non-Vibrating Filaments

After "Rigid Unit Construction" comes the "Non-Vibrating Filament"—in other words, the Mullard non-microphonic assembly for battery-heated valves.

The causes and effects of microphony in present-day receivers are too well known to need detailed treatment here, but it should be stated that, in the case of battery-heated valves, it is the more or less tightly-stretched filament which is most likely to be set in vibration by external forces such as those transmitted from the loudspeaker.

It is due to the almost universal use of speakers built into the receiver cabinet, and located perhaps only an inch or so from the valves themselves,

that the need of special non-microphonic construction is felt to-day.

In developing their new non-microphonic construction for battery-heated valves, the Mullard Company have tackled the problem from a novel angle, and by an ingenious device

### HUNDREDS A DAY



This earnest young lady knows all about H.T. batteries, for she is one of the large testing-staff at "Ediswans." Note the giant meter.

have eradicated the risk of microphony at its source.

At present the following Mullard 2-volt valves embody the "non-vibrating filament":

Screened-grid type P.M.12A., detector types P.M.1H.L. and P.M.2D.X.

### Games for Christmas Parties

The problem of entertaining guests at Christmas parties is always a difficult one, for cards are hardly in keeping with the festive season, and

space is not always available for dancing. The host often falls back on the old-time favourite games, but there are few which are suitable for young and old.

A simple competition can be arranged by asking those present to guess the tunes played on a record. Two special H.M.V. records called "Guess the Tunes," Nos. 1 and 2, are now available for this purpose (C2298 and 2492).

There is another record which is excellent. On a ten-inch disc, H.M.V. B3875, a selection of 53 tunes from popular musical comedies are played by the New Mayfair Orchestra. A list of the titles may be obtained from "His Master's Voice."

### Plenty of Fare

An excellent racing game may be played with a record called "Back your Fancy," H.M.V. B4085. On this disc there is recorded on six concentric tracks the sounds of a horse race at Alexandra Park. At the end of each track an announcer states that a certain horse has won.

Special records for fortune-telling have been published. Firstly, there is a ten-inch one, H.M.V. B3979, by Claude Hulbert and Enid Trevor, in which six comic fortunes are given on each side, one side being devoted to ladies and the other to men. Then a serious prediction of the future may be obtained from the special album of records which have been made by the famous astrologist, R. H. Naylor, H.M.V. B4292-4303. By referring to the appropriate record Mr. Naylor will reveal interesting facts concerning the guests present at the party.

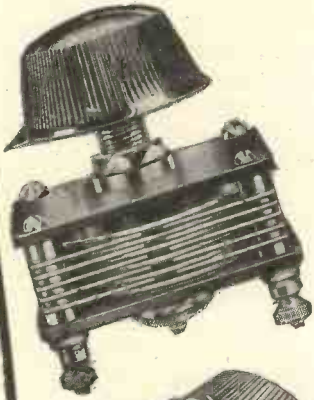
### BERTINI'S BLACKPOOL BROADCASTS

He is *not* listening to one of Bertini's popular items from the Tower Ballroom, for, as a matter of fact, he is Bertini himself, enjoying a programme from his Ferranti super-het.

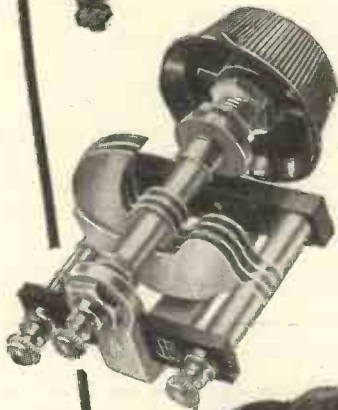




# FOR YOUR S. T. 400



**J. B. DIFFERENTIAL.**  
·0003, 4/6. ·0001, 4/-.  
Insulated centre spindle. Bakelite dielectric between vanes.



**J. B. MIDGET.**  
·00004. Complete as illustrated, 4/-.  
Small dimensions. Low minimum capacity. Ebonite insulation. Rigid one-piece frame.



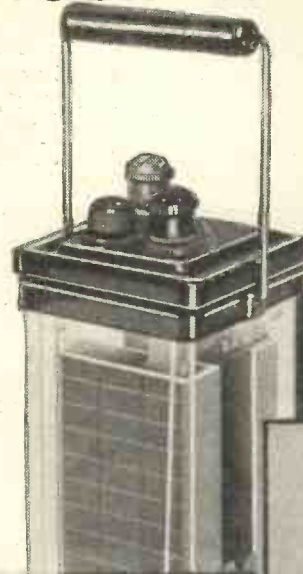
**J. B. POPULAR.**  
Slow-motion type (35/1).  
Capacity, ·0005. Complete with 3" dial, 8/6. Extra heavy gauge brass vanes. Rigid nickel-plated frame. High-grade ebonite insulation.

Ask  
to  
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Advertisement of  
Jackson Bros., 72, St.  
Thomas' Street,  
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## Designed on a NEW PRINCIPLE to give LONGER LIFE and HIGHER AMPERE- HOUR EFFICIENCY



Type E.L.M.4. 45 a/h capacity. Price 8/-



Type E.L.S.7. 60 a/h capacity. Price 12/6



Type E.L.9. 80 a/h capacity. Price 12/3

The new Ediswan "balanced capacity" accumulator is an entirely new development. The special design of the positive and negative plates which ensures exact electrical "balance," allows this accumulator to charge more rapidly, discharge more slowly and hold its charge longer than ordinary types. Twenty-five years of experience lie behind the production of Ediswan accumulators, while every possible mechanical refinement has been incorporated—British-made containers of clear glass, moulded ebonite lids, screwed vents, non-corrodible and non-interchangeable connectors and a metal carrier which fits neatly round the container.

Write for Leaflet No. A.B.736

# EDISWAN *EXTRA LIFE* ACCUMULATORS



THE EDISON SWAN ELECTRIC CO. LTD.  
155 CHARING CROSS ROAD, LONDON, W.C.2 B.193

**ON THE TEST BENCH**

—continued from page 595

the control to be extremely generous. At the extremes the effect is almost uncanny, while between them an even and well-spread-out adjustment is possible, all merely by rotating the potentiometer knob.

**Efficient and Trustworthy**

The Telsen tag type is a very neat form of condenser, for it can be mounted on the baseboard, secured to the terminal of another component or suspended on its own connections.

We have used many of these Telsen Tag condensers and have found them efficient and trustworthy in regard to their ratings.

The same can be said of Telsen Fuses, for these we have discovered on test and in practice to be perfectly reliable. The Telsen 1-1 Coupling Unit embodies all the elements necessary for efficient resistance-capacity coupling plus decoupling. It is a sound component and can be fully recommended.

We discussed the Telsen Screened Coil in a previous issue, in which we indi-

cated that we considered it to be one of the best of all the "canned coils" available to the constructor.

**The Becker Kitswitch**

This is a modification of the Becker-Switch especially designed for chassis-assembled sets. It has a long knob and this merely slides through the neat panel fitment.

Thus the whole body of the switch can be fixed to a chassis and withdrawn with it from the cabinet.

The switch is excellently designed and made, and has a perfect snap action. It will handle up to 4 amperes at 250 volts, and is therefore suitable for any set, battery or mains.

**Versatile Terminals**

Constructors who have experienced the rather wasteful duplication of indicating terminals that is likely to occur as different sets are built and dismantled will appreciate the new Eelex Terminal.

It is known as the A.1, and it is sold in sets of four, each set being accompanied by 24 different indications.

These interchangeable indications are not merely lettered washers, but neatly fit into the head of the terminal.

A valuable feature is introduced into the improved "Eelex" Wander

Plug. By means of an ingenious slot extension the binding screw is now made to serve two purposes: (1) to hold the connecting wire, and (2) to increase the size of the plug so that the prongs can accommodate themselves to fit the larger bores of non-standard sockets.

**Rotorite**

There must still be many tens of thousands of crystal-set users, and, therefore, "Rotorite" should find a fairly ready market.

It is a new substitute for the ordinary kinds of crystal, and is made by Messrs. Ward and Goldstone.

It is fashioned in small circular tablets which can be fitted in any crystal detector.

We find it very sensitive, definitely better than such things as galena, and, moreover, it is equally sensitive at any point on its surface.

It retails at 6d. per tablet.

**Inexpensive Panels**

We recently received a sample radio set panel from the Vibranti Products Co. It has an artistic figured surface and is an interesting alternative to the ebonite and bakelite types, especially as it is cheaper.

We find it perfectly satisfactory.

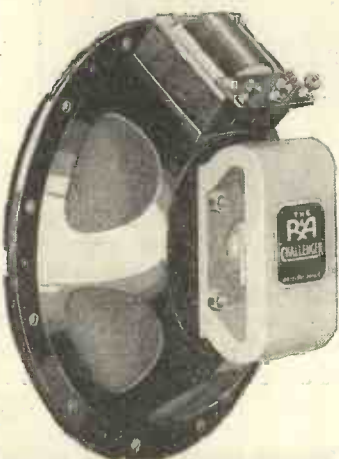
**Has your Loud Speaker a poor response?**

Can it reproduce the deep notes of the organ and the jingle of keys? If not you are losing an important section of the musical frequencies without which balance and fidelity are impossible:

Read the following extract from the "Wireless World" Test Report on the "Challenger" Permanent Magnet Moving Coil Reproducer—"Wireless World," 1st June, 1932, states—

"The performance of this unit is such that it merits discussion from an absolute standpoint and without regard to the very reasonable price asked. Overall sensitivity slightly better than the average. Reproduction of bass below 100 cycles quite definitely above average as a result of the well-maintained output down to 50 cycles a full-bodied bass is obtained without 'boom.' Reproduction of speech is natural and unforced, and the balance in music is exceptionally good."

INCLUDING 3-ratio Ferranti Transformer **35/-**



**The RA & A "CHALLENGER"**

REPRODUCERS & AMPLIFIERS, LTD.

WOLVERHAMPTON

MAKE YOUR SET SELECTIVE

EFFICIENT  
**BAND-PASS FILTER**  
with  
**FORMO**  
BAND-PASS UNIT

Sets that are a year or so old can be made finely selective without any alteration by the addition of the Band-Pass Filter shown on the left. This highly selective unit provides the requisite selectivity and improves tonal quality. It requires little more than a Formo Band-Pass Tuning Assembly and has been designed by a well-known expert as a simple and inexpensive way to bring any set up to date.

Write for a copy of the designer's Article describing the Filter in detail.

Formo Dual Gang Band-Pass Unit Complete **33/6**

Triple Gang Band-Pass Unit **46/6**

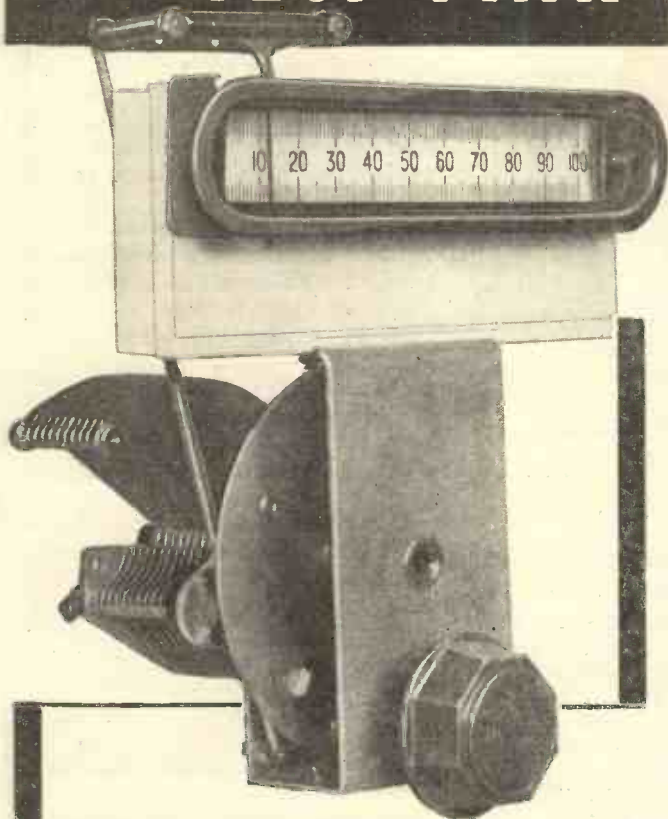
If you have any difficulty in obtaining, write for latest Formo Catalogue.

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London Showrooms: 23, Golden Sq., Piccadilly Circus, W.1  
Head Office: Crown Works, Regent's Park, Southampton



# THE PERFECT PAIR



Now, at a price no higher than you would pay for an ordinary condenser you can buy a Utility '0005 condenser complete with the Utility Straight Line Dial. The Straight Line Dial makes every other type of tuning obsolete. A *moving* pointer traversing a *stationary* scale which is always in full view is surely the best method of tuning; but you can only get it with the Utility Dial. *From your dealer or post free from the makers.*

And look at the  
**PRICE**  
**9'6**  
complete as  
illustrated.

## WHOLE WORLD 5

For this fine five-valver you require a Utility '000r reaction condenser and a Utility 181 Slow Motion Dial. Split hair tuning is imperative for S.W. reception, that is why the Utility Dial is so essential.

W.181 Dial, 7/6. '0001 Reaction Condenser with Knob, 4/-  
**WILKINS & WRIGHT LTD**  
Utility Works, HOLYHEAD RD., BIRMINGHAM  
London Agent: E. R. Morton, Ltd., 22, Bartlett's Buildings, Holborn Circus, E.C.4.

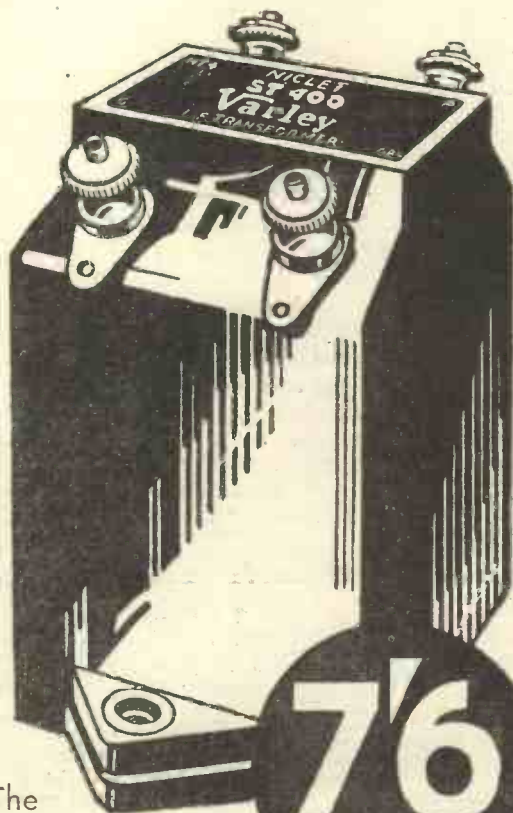


# SPECIFIED

and recommended by  
**Mr. Scott-Taggart** for the  
**"S.T.400"**

and specially selected for the  
**S.T.400 READY RADIO KIT**

The Varley NICLET was specified in the original "S.T.300," and Mr. G. P. Kendall, B.Sc., Chief Engineer of Ready Radio, has chosen it in preference to all alternatives for inclusion in the Ready Radio "S.T.400" Kit. See that you get the correct Model. Not a standard "Niclet," but THE S.T.400 NICLET—specially designed and labelled for this great set by Varley.



**7'6**  
READY NOW

The  
**S.T.400**  
NICLET



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Advt. of Oliver Pell Control Ltd., 103, Kingsway, W.C.2

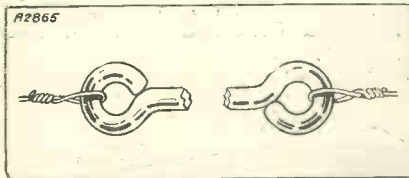
Tel.: Holborn 5303

### Insulators for Short Waves

**I**N these days of ultra-efficient receivers and screened-grid amplification, many people are apt to neglect their receiving aerial and think that any old piece of wire suspended somewhere, indoors or out, will do. As a matter of fact, it generally will "do" for ordinary broadcast reception, although there is no doubt that a good aerial is a great initial advantage.

However, it is for those interested in the very short wavelengths of 100 metres and downwards that a good, well-insulated aerial is most important, because losses are much greater at these higher frequencies. Also, high-frequency amplification is not so efficient, and is far more unmanageable, so that it is necessary to get as much initial efficiency as possible.

#### GLASS IS GOOD



You can make these efficient glass insulators at home.

The height and position of the aerial is generally restricted by local conditions, but we can certainly see that it is well insulated. A good aerial insulator should be of suitable material, with low dielectric losses, and should have small surface leakage and low capacity (large separation of the aerial and supporting wire), and sufficient mechanical strength.

For amateur aeriels, where the strain is not very great, glass rod insulators have these advantages, and they are almost ideal for short-wave work.

When filing the edge of a panel, always hold the "free" end of the file with the left hand to keep it steady.

\* \* \*

Many hacksaw users do not realise that the handle and end fitment are removable from the frame, which can thus be turned at right-angles to the blade when cutting a strip from the edge of a panel, etc.

\* \* \*

When a fuse bulb is inserted in circuit between H.T. negative and L.T. negative, the lead to the filaments of the valves should always be taken from the L.T. negative terminal, and not from the H.T. negative terminal as sometimes happens.

### FOR THE SET BUILDER

Some useful hints and radio wrinkles.

They can be made quite easily from glass rod,  $\frac{1}{8}$  in. or  $\frac{3}{8}$  in. thick, bought from a dealer in chemical apparatus. This is cut, by nicking deeply with a triangular file and then breaking, into pieces about 14 in. long.

The next thing is to fashion a small loop at each end of the rod. This can be done in a large Bunsen flame, or over the largest burner on the gas-stove.

Taking one end at a time, heat about 1½ in. of the rod to a bright red heat. It will then begin to sag, and, with a little care and the help of a piece of wire can be coaxed into a neat loop—the tip of the rod joining, and becoming welded to, the stem.

#### Cool Gradually

The important point now is to anneal the rod—that is, cool it slowly—otherwise it may be very brittle when cold. This is done by gradually removing it farther and farther from the flame, or, if a Bunsen burner is being used, by closing the air holes, when the flame will become luminous and smoky. The deposit of soot thereby formed on the glass, being a bad conductor of heat, will cause it to cool more slowly.

The method of using these insulators is obvious—the aerial wire is attached to one loop, and the supporting wire, or halliard, to the other. It is best to bind the spot where the wire touches the glass with a small piece of felt or cloth, to minimise the risk of breakage.

### A Handle for Your File

**T**HAT small file of yours—how much handier it would be if you provided a suitable handle for it. Yet, I suppose, if you are a busy worker, you have, like many others, omitted to provide for this detail of ease and comfort in working.

A good handle for a file, particularly for a small file, may be provided simply by procuring a few inches of stout lead tubing and by hammering one end of the tubing flat over the tang of the file.

After this, slip a piece of rubber tubing over the lead tubing in order to provide an easy and comfortable grip for the handle.

In the photograph herewith the lead tube comprising the handle is in position over the tang of the file, but the rubber tubing which covers it has been partly rolled back in order to render the construction of the article clear.

A file-handle of this nature takes about five minutes to make, but after you have been working with the file for a lengthy stretch you begin to realise that the five minutes which you put in at the construction of the handle were minutes soundly spent!

J. F. C.

#### FOR EASY HANDLING



Lead tubing and rubber give the file an excellent "grip."

A particularly distressing form of interference is that due to the use of sun-ray lamps, etc., and the users of such lamps in the home who remember to try and use them outside broadcasting hours will be conferring a great boon on their neighbours.

\* \* \*

It is often said that a carpenter's brace may be pressed into use for drilling a panel, but difficulty is sometimes experienced because the drill is much too small for the jaws of the brace to grip. There is an easy way out—wind a piece of wire round the shank of the drill in the form of a spiral, thus in effect thickening the shank sufficiently for the jaws of the brace to "bite" on it.

### PRACTICAL PARAGRAPHS

that will aid you to better reception.

When holding a panel in the jaws of a vice always remember to "pad" round it with a thick cloth or several sheets of paper, or the vice will mark it.

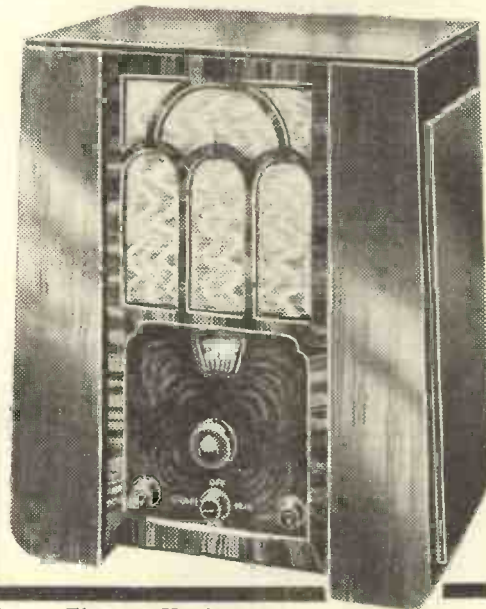
\* \* \*

The Droitwich station, which the B.B.C. has planned to replace 5 X X and 5 G B, will be a twin-waver, with 100 kilowatts on the long waves and 70 kilowatts on medium waves.



# TONE and the child

Quality of Radio Tone is so essential to the acquisitive ear of children. Just imagine the effect of bad reproduction of music and speech day after day—a child might easily become accustomed to it and as a result lose that refinement in sense of harmony and vocal expression. It is the amazing realism of 'Madrigal' that makes selection easy by comparison with other sets, and it certainly leaves the dealer no option but to recommend 'Madrigal.'



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You cannot buy a Receiver at anywhere near the price of 17 gns. that is as good in general performance, quality of musical tone and finish as the "Madrigal." Neither can you select anything so reliable and less likely to become out of date with future radio and electrical developments.

R.I. will gladly arrange a demonstration of the 'Madrigal' for comparison at your home. Write to us without delay—also ask for a copy of the 'Madrigal' Brochure.

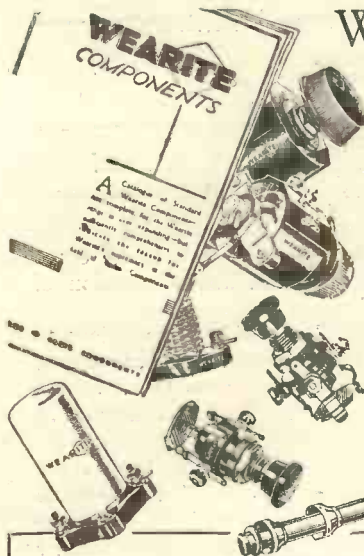
PRICE, including all Valves and Royalties

**17 Gns.**

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Before you build any "Modern Wireless" Set, or any other set, send for this book, No. 01, and have it by you. It contains a wealth of information on really up-to-the-minute components. Coils, resistances, chokes, mains transformers, volume controls—indeed, every need of the constructor is covered. Get your copy now.

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	s. d.		s. d.
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1 L.F. choke (H.T.25)	9 0	1 3-point switch (G.W.C.)	1 3
3 4-pin valve-holders (S.1.)	each 1 3	2 H.F. chokes (H.F.P.)	each 3 6
2 H.F. chokes (H.F.P.)	each 3 6	1 L.F. choke (H.T.25)	9 0
		1 Cosmic short-wave coil	3 6
		1 3-point switch (G.W.C.)	1 3
		1 Pot'meter, 50,000 ohms (Q.V.C.)	4 6

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M.5.

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Post in 1/2 envelope.

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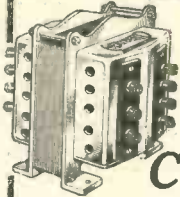
4M.W. ....



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Make **The DAILY SKETCH** YOUR Picture Paper

**RECORD SPEED**

—continued from page 602

of equal strips, but with the aid of a pencil and a small amount of patience it will be found quite simple to divide the edge of a turntable into 154 equal divisions. These divisions should then be painted alternately in black and white.

In order to assist radio-gram owners, MODERN WIRELESS has reproduced a stroboscopic speed indicator on page 602.

**Using a Stroboscope**

It should be cut out and stuck on a postcard or thin piece of cardboard. A pair of scissors should then be employed to cut round the indicator and the hole carefully cut out of the centre. It is then ready for use.

Put a record on the revolving turntable, and the pick-up or sound-box on the record. The speed indicator should be placed over the record label and then make sure that the electric light is switched on. If you now look at the edge of the speed indicator you will find that either—

- (1) The black lines appear to be stationary;
- (2) They are moving to the left;
- (3) They are moving to the right.

No. 1 shows that the speed of the record is 78 r.p.m. and is correct. No. 2 indicates that the record is running too slowly. No. 3 denotes that it is running too fast.

**WHEN MAINS CONDENSERS FAIL**

By **HANDEL REES**

**W**HAT will happen when a condenser breaks down in a mains unit?

The answer seems obvious at first. A punctured condenser is equivalent to a "short" across whatever device it is connected, and we generally associate mains shorts with a blowing of something. If a legitimate fuse is included in circuit, the blowing will be confined to that, but otherwise transformer or choke coils will act as effective "fuses."

**Ending in "Smoke"**

For instance, suppose the condenser across the smoothing choke of a D.C. eliminator were to fail.

It will be seen from Fig. 1 (a) that

the choke is thereby thrown directly across the supply, and it would end in "smoke" in an exceedingly short space of time unless a protective fuse is included between it and the supply.

But looking at Fig. 1 (b), which shows a similar smoothing arrangement in an A.C. eliminator, we get a slightly different state of affairs.

The D.C. component of the current is now limited, chiefly, not by the choke and transformer coils, but by the comparatively high resistance of the rectifier R. The current will,

**WHAT WILL HAPPEN?**

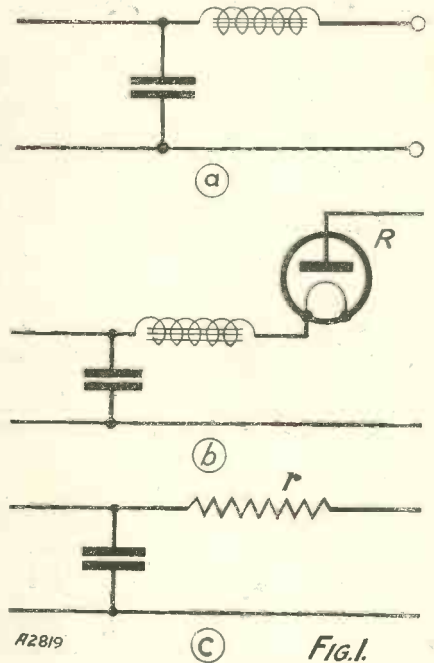


Fig. 1

These are the three circuit arrangements discussed on this page.

therefore, only rise to a figure equal to the maximum anode emission of the valve.

That will probably be sufficient to cause overheating, and the output voltage will fall to zero, but it is seen that the effect is not as disastrous as in the D.C. case.

Going a step farther, we get in Fig. 1 (c) a condenser in a detector tapping with a very high resistance *r* in circuit. This resistance is usually of the order of 20,000 to 30,000 ohms, and serves the dual purpose of voltage-dropping and decoupling.

**No Overheating**

But it will also limit the short-circuit current to a few milliamps only, in case of breakdown of the accompanying condenser. Here there would be no overheating whatever, nor even any other indication that breakdown had occurred, apart from the fact that the receiver would fail to work.



**TOROIDAL COILS**

Sir,—On reading an article on the "new" coils in a wireless periodical recently I was amazed to find no reference to M. I. Pupin, the inventor.

Toroidal coils with cores of moulded iron dust were first described before the American I.E.E. in 1900 by M. I. Pupin, and patented by him in the same year. They are used on telephone and telegraph cables for increasing inductance, thereby reducing attenuation.

Is it not significant that the appearance of the "new" coils coincides with the recent expiry of Pupin's patent?

Pupin's coils and the "new" coils are identical, with the exception that the former are calculated in millihenries and the latter in microhenries. Surely no reference to toroidal coils is complete without mention of Pupin?

Yours faithfully,  
C. G. WISDOM.

Glasgow, W.2.

**RECENT RECORD RELEASES**

—continued from page 596

Last, but by no means least, you must look out for the new recordings of the finest tenor the world has seen. Yes, Caruso! H.M.V. have taken the old Caruso recordings, weakly played them through and recorded from them the voice only. Naturally, it was very weak, but it was strong enough to work with, and the accompaniment being weaker could be left out altogether.

Then with scrupulous care the failings of the acoustic recordings were adjusted and balanced out, leaving the same voice, but as it would have been had it been picked up by a microphone instead of the metal horn.

This new voice, which is actually far more like the real thing than it was on the first record, is again recorded, together with a full orchestra, resulting in a finished disc of wonderful life.

The first of these Caruso records contains his most famous song, *On With the Motley*, from "Pagliacci." I have just heard it and it's a fine achievement. Well done, H.M.V.!

Finally, you will find brief descriptions of some of the H.M.V. Special Xmas records on page 618.

**ZONOPHONE**

Novelty is the main aim of the Zonophone Company, and we are always sure of something new in their list each month. This time probably the chief novelty is the "relay" of the England-Scotland Association football match at Wembley. It is described by George Allison, and was evidently taken while the broadcast of the match was in progress. It is a novelty, but I cannot see its value as a sales inducer, or as an entertainment. Canned football does not appeal to me.

On the other side we have Bertini and his Band, at Blackpool, playing *I Do Like to See a Game of Football*, a very apt link-up with the first side. (6217.)

Another novelty that is more amusing is the *Making a Record*, by Carson Robison and his Pioneers. It gives a slight (very slight, of course) idea of the operations of a recording studio, and the record is quite a good idea. (6224.)

Leonard Henry has been requisitioned to give a version of Laurel and Hardy's theme tune, *Dance of the Cuckoos*, with *He's Dead, But He Won't Lie Down*, as the companion item. Neither is particularly funny or clever, and in my opinion the record hangs fire. (6227.)

Ambrose's second band, *The Blue Lyres*, contribute a good record in 6205, whereon we get *He's in the Infirmary Now*, and *I'm Writing a Letter to Heaven*, the latter being the dance version of a well-known and one-time favourite song. K.D.R.

**IN PASSING**

—continued from page 614

whimpering, broken Thing, he forced himself to consult Sir Theophrastus Thusly—"the Knife Man," they called him—and grovelled before that hairy old quack-butcher. He begged for The Knife.

**Oh, Horror!**

Sir Theo pressed a finger upon The Place. "Did that hurt?" Oh, more than ever! Good! Then we will operate.

Operate! Oh, word of terror! The preliminary dieting, the journey to the operating theatre in a wheelbarrow.

The rows of cheery students and the unsexed beings called nurses, fiddling with sponges and shining metallic deviltries. The hideous garb of the surgeons who clustered round as vultures swoop down and cluster over the . . .

Enter Sir Theo, who conducts a muttered conversation with a nurse and a fat fiend of a surgeon. Bunge is laid out like a rabbit on a salesman's slab.

They paw The Place. They make horrid clinking sounds with instruments. The students lean forward as one man. Sir Theo approaches and poises a scalpel, preparatory to making a longitudinal incision. . . .

**Out of Time**

The victim screams: "But the anaesthetic! I've not gone off yet. You can't—"

Sir Theo looks grave. "My friend," he says, "you are out of your time. The maker of chloroform and the man who used it as an anaesthetic are not yet born."

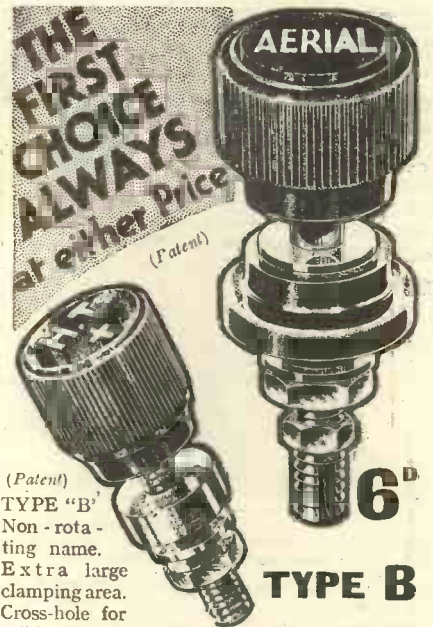
The scalpel descends. Pain—pain like to wrench the soul from the tortured body follows.

Bunge shrieked—and then dropped from the ceiling to the floor, chair and all.

**They Have Their Uses**

His lighted cigar had fallen from his lips and slipped down between waistcoat and shirt.

He blinked, blew out his cheeks, and in an access of weakness due to his relief of mind he said: "Phew! These inventors have their uses. I offered that young ass fifty pounds. Dash it—I'll make it guineas."



(Patent)  
TYPE "B"  
Non-rotating name.  
Extra large clamping area.  
Cross-hole for solid tags or wire. Slot and nut to eliminate soldering.  
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Non-removable rotating head.

Belling-Lee Terminals are specified for the "Metric" Three and the "Seven Valve" Super-Heterodyne in this issue.

**BELLING-LEE TERMINALS**

Advert. of Belling & Lee, Ltd., Cambridge Arterial Road, Enfield, Mdx.

TYPE "Electradix"  
**BATTERY**  
FROM L.T. TO H.T.  
No H.T. Batteries needed with a **SUPERSEDER** even if you are not on the mains.  
Reduced from £3 15s. to:—  
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It gives three voltages of D.C. from your filament battery, and lasts indefinitely, and is an S. G. Brown boon and blessing to H.T. battery users.

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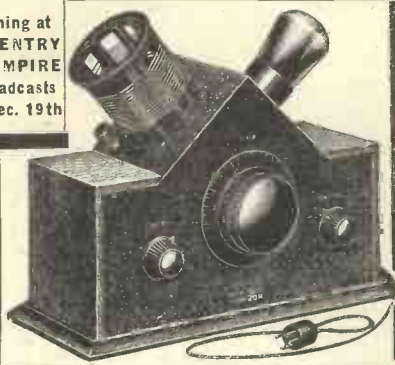
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**WITH** the latest **Magnum Short-Wave Adaptor** (suitable for both A.C. Mains and Battery Sets).

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Cord and Plug .....

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**Model T.A.** For sets using British Valves.  
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The price is the same for both models.  
**Note:** They are not suitable for sets where a S.G. Valve is used as a detector.

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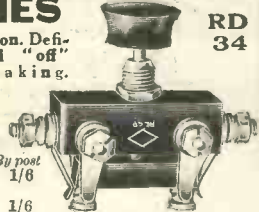
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# RADIO NOTES and NEWS of the MONTH



### Still Going Up

**O**VER five million wireless licences have been issued in this country. In fact, to be precise, as we go to press we learn that the figure is now about 5,011,000.

As usual, prophets in the Press are busily estimating the day when we shall reach saturation point, while amateur mathematicians are involving themselves in calculations as to the average number of listeners per set.

On the whole, twenty million listeners seem to be a favourite computation.

### Always the Way!

Much space has been given in the papers to the B.B.C.'s tenth birthday celebrations, but perhaps one of the truest comments on the work of the B.B.C. was made recently by Mr. St. John Ervine in our contemporary, "The Listener," in which he pointed out there there was far more space devoted to the debacle in connection with Mr. J. B. Priestley's lost manuscript than there was devoted to Mr. Priestley's actual talk.

### Pin-Prick Policy

There is no doubt that many newspapers to-day take a perverse delight in pin-pricking the B.B.C., and in devoting valuable space to futile and fatuous criticisms, not of the B.B.C. programmes, but of the B.B.C. itself. What we really want these days is less talk about the B.B.C. and more constructive talk about broadcasting.

### Apologetic!

Congratulations to Mr. Cedric Belfrage in coming forward to make a handsome apology for the recent remarks he made in connection with the gentlemen who control the film industry. Mr. Belfrage undoubtedly dropped a brick which caused more than a slight disturbance, but he has had the good sense and good taste to apologise, so let's hope the matter is now forgotten.

### France's Latest

In spite of the congested state of the ether to-day, the craze for building high-power stations shows no signs of

abatement. Information is to hand of a new French transmitter with a power of 60 kilowatts, to be erected at Rennes, in Normandy. First test transmissions are likely to take place early in the Spring.

### More Newcomers

There is a new 120-kilowatt Austrian station now being erected at Bamberg, near Vienna, which will be on the air towards the end of December, while tests have already been heard in this country of a new super-power Russian broadcasting station being erected near Moscow.

### German Changes

Only a few weeks ago the new German high-power station at Leipzig took over Frankfurt's wavelength of 389.6 metres and began high-power transmissions to the tune of 120 kilowatts, while Frankfurt went down to the wavelength of 259 metres, but had its power increased from 1.5 to 17 kw.

### Milan and Bucharest

Milan has also now become a super-power station, having increased its power from 7 kw. to 60 kw.; while a new Bucharest transmitter is being erected some twenty miles from the city.

In short, it looks as though there's a hot time ahead for listeners who want selectivity this season.

### P.P.E. Publicity

We have recently been looking through some of the Australian newspapers published during the visit of our Chief Radio Consultant to Australia, and although we were prepared to find a good deal about P. P. E., we must say we were amazed at the tremendous amount of space devoted in the newspapers to his visit. Undoubtedly, Capt. Eckersley proved one of the most popular and interesting visitors that great Continent has had for many a long year.

(Continued on page 627)

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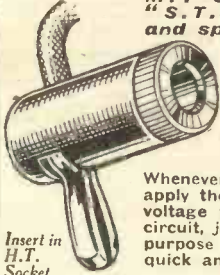
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# CLIX

## CLIX "DUAL" PLUGS

*Specially designed for Mr. Scott-Taggart's "S.T.400" Receiver and specified by him.*



Insert a "Clix" "Master" Plug here.


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Whenever it is desired to apply the same H.T. or G.B. voltage to two points in a circuit, just use this double purpose wander plug for quick and sure contact.

Insert in H.T. Socket.

### PANEL TERMINALS

Clix Improved Terminals are very robust: have completely insulated and non-removable heads. Note the HEXAGON SHOULDER which allows it to be held with a spanner while the nut behind is made tight. Red or Black, with full range of easily read markings. Type A, 2½d.



Type B, with hexagonal shoulder **4d.**

Write for folder "M.2."

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# MODERN BOY

2d.

## RADIO NOTES AND NEWS OF THE MONTH

—continued from page 626.

### The Debt We Owe

Day after day we find issues of Australian journals devoting literally columns to P. P. E.'s views on broadcasting. One of these days we shall wake up in this country and realise how much we owe to Capt Eckersley for the present remarkable technical efficiency of the British broadcasting transmitting system.

### Nine-hundred Prosecutions

Judging from propaganda issued by the Post Office, the last pirate campaign has been a record-breaker. Readers will remember it began on

**NEXT MONTH**

Don't forget to order your  
January

**"MODERN WIRELESS"**

It will be another  
**GREAT GIFT ISSUE.**

Out on Dec. 31st. One Shilling.

October 10th, but by the end of the month 784,000 licences had been taken out. This figure, of course, includes renewals of licences, but nevertheless there is an increase of 144,000 more than in any other month. Incidentally, more than 900 prosecutions were initiated against pirates during the month of October.

### The Opera Subsidy

A good many listeners will learn with satisfaction that the Opera Subsidy has been withdrawn, and that a new scheme has been entered into between the B.B.C. and the opera authorities whereby the B.B.C. will continue to support opera by arranging for a number of transmissions for which they will pay. In return for this the Postmaster-General has ar-

anged the terms of the licence fees in favour of the B.B.C. This subsidy was an annual allowance of £17,500, granted in November, 1930, for a period of five years. The cessation is undoubtedly justified.

### A Blue Book "Revolution"

It isn't often we read about a revolution in broadcasting reception methods in a Blue Book such as that issued by the Radio Research Board, by the Department of Scientific and Industrial Research. The title of the article in question is rather a forbidding one—"A Theoretical and Experimental Investigation of High-Selectivity Tone-Corrected Receiving Circuits."

### Stenode System

The article deals chiefly with the invention of Dr. James Robinson  
(Continued on page 628.)

**• EVERYONE—**

**INTERESTED IN SHORT WAVES SHOULD READ THIS BOOK!**

CLEARLY WRITTEN  
PROFUSELY ILLUSTRATED.



**1/6**  
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**EDDYSTONE Short Wave MANUAL**

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CONSTRUCTIONAL ARTICLES FOR SHORT WAVE SETS, ADAPTERS, WAVEMETERS

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*List and cost of parts given in detail for each set.*

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# EDDYSTONE SHORT WAVE MANUAL

**FOR EVERY SET — there's a** **SEND NOW FOR LATEST LISTS**

# PILOT AUTHOR KIT

**PETO-SCOTT CO. LTD. 77, CITY RD. LONDON, E.C.1 CASH — C.O.D — or H.P.**

**RADIO NOTES AND NEWS OF THE MONTH**  
—continued from page 627

known as the "Stenode" system, and around which, as our readers will remember, there was a terrific controversy a few months ago; but it appears that all is now well, for an investigatory committee, presided over by Professor E. V. Appleton, has come to the conclusion that the performance of receivers working on the Stenode principle is consistent with hitherto accepted theories. Furthermore, investigation has shown that receivers on the Stenode system reduce considerably what might be called programme interference by the neighbouring stations.

**Sidebands and Selectivity**

In short, Dr. Robinson's invention achieves the cutting off of side-bands, thus obtaining razor-edge tuning, but afterwards restoring them at a later stage in the receiver.

One of the methods of obtaining maximum selectivity is by the use of quartz crystals, at the same time employing the super-het. principle, thus suggesting the revival of a super-crystal-set receiver.

**The Empire Programmes**

As our readers know, the Empire has been divided into five zones for the purpose of Empire broadcasting, and details of times and transmissions are as follow:

- 9.30 a.m. to 11.30 a.m.—Transmissions to Australia, New Zealand and the Pacific Islands.
- 2.30 p.m. to 4.30 p.m.—To India, Burma, Ceylon and the Malay States.

- 6 p.m. to 8 p.m.—To East Africa, Mauritius, Egypt, Malta and Palestine.
- 8.30 p.m. to 10.30 p.m.—To West Africa, Falkland Islands and, probably, South America.
- 1 a.m. to 3 a.m.—To Canada, West Indies, Honduras, etc.

**BETTER RECEPTION**  
**Some Practical Hints**

The reason that 7/22 stranded wire is so often recommended for aerials is because it is not only electrically efficient, but its thickness and construction give it great mechanical strength as well.

When it is found impossible to keep a mains unit in the same cabinet as the set, owing to hum, it will sometimes be found possible to eliminate the trouble completely by shielding the unit with an iron cover.

Voltmeter tests of batteries should always be carried out under load conditions—that is to say, when the set is working—and not when it is switched off.

**XMAS GREETINGS FROM DAVENTRY**

(Continued from page 527)

Exactly the same wavelength cannot be used for each transmitter, and that is why there are two wavelengths close together in each band. They can switch the power from 15 kilowatts up to about 20 kilowatts on any wavelength.

In the reception section at Daventry

there are metal-fronted check sets, but these are for side-tone checking only. Short-wavers (built at the Clapham research station) will be used at a considerable distance, and field-strength measurements 'phoned through after each aerial test.

The ordinary trunk lines up from Broadcasting House to 5 X X provide the programme material for checking—the first aerial tests being done with an unmodulated carrier so that there would be no amateur interference.

**Metal Masts**

There are seventeen aerials built surrounding the 5 X X and 5 G B transmitter houses. They are metal, and not the wooden masts at first planned. The line of the masts mainly faces East to West. The engineer said they were erected after a careful study of a Great Circle map so that the exact line to various parts of the Empire could be chosen.

The width of the beam can be varied at Daventry by simply adding a wire, which is rather wonderful, for it means that the Empire beam can be focused.

**Ready for Christmas**

The masts, being of tubular metal, are rather impressive, and are a great deal different from the original sketch I saw. They are 80 feet high, and have "tops" like the Rugby masts. There is more than one mast for each Empire Zone. That is why seventeen are needed. At present there is so much to be done indoors that the aerial engineers will not alter the wires for the next few weeks, but they have a full programme of aerial tests to do when they are sure that both transmitters are O.K.

Everything will soon be finished, for Mr. Whitley, the B.B.C. Chairman, has promised that there will be a Christmas broadcast to the whole Empire.

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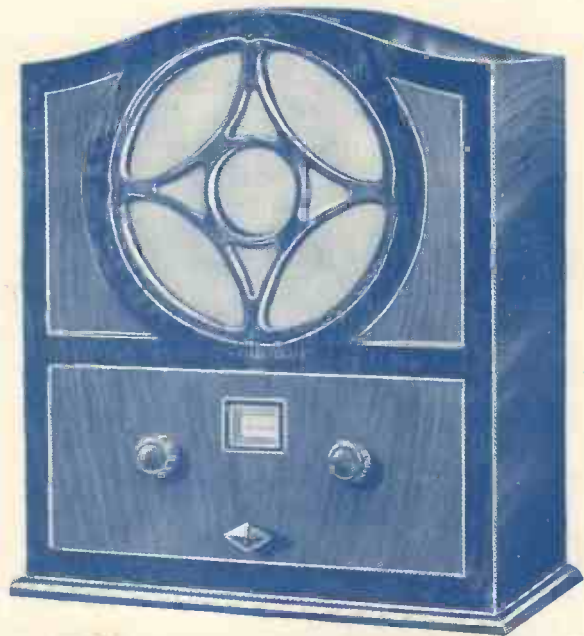
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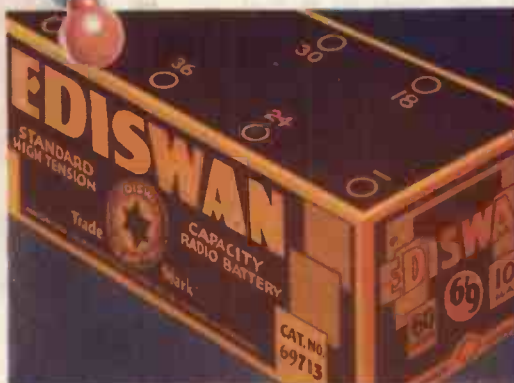
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